

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: LIONRA TECHNOLOGIES LTD.

Application No./Patent No.: 7,738,471 Filed/Issue Date: 6/15/2010

Titled: High speed packet processing in a wireless network

LIONRA TECHNOLOGIES LTD., a Limited Liability Company

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☒ The assignee of the entire right, title, and interest.
2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):
- ☐ The extent (by percentage) of its ownership interest is ____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.
- ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (e.g., bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

- A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.
- B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Mitel Kuliner To: Harris Corporation

The document was recorded in the United States Patent and Trademark Office at
Reel 019948, Frame 0668, or for which a copy thereof is attached.

2. From: Harris Corporation To: Harris Solutions NY, Inc.

The document was recorded in the United States Patent and Trademark Office at
Reel 047600, Frame 0598, or for which a copy thereof is attached.

[Page 1 of 2]

This collection of information is required by 37CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35U.S.C. 122 and 37CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: Harris Solutions NY, Inc. To: Harris Global Communications, Inc.

The document was recorded in the United States Patent and Trademark Office at
Reel 047598, Frame 0361, or for which a copy thereof is attached.

4. From: Harris Global Communications, Inc. To: Lionra Technologies Ltd.

The document was recorded in the United States Patent and Trademark Office at
Reel 058307, Frame 0176, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☒ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Antonio Papageorgiou/

Signature

Antonio Papageorgiou

Printed or Typed Name

May 1, 2024

Date

53431

Title or Registration Number

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.



UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #
11/855,714

RECEIPT DATE / TIME
05/17/2024 06:07:31 PM Z ET

ATTORNEY DOCKET #
7162-0233US0

Title of Invention

HIGH SPEED PACKET PROCESSING IN A WIRELESS NETWORK

Application Information

APPLICATION TYPE Utility - Nonprovisional Application
under 35 USC 111(a)

PATENT # 7738471

CONFIRMATION # 7436

FILED BY Laura Alto

PATENT CENTER # 65578958

FILING DATE 09/14/2007

CUSTOMER # 68085

FIRST NAMED
INVENTOR Mitel Kuliner

CORRESPONDENCE
ADDRESS -

AUTHORIZED BY Antonio Papageorgiou

Documents

TOTAL DOCUMENTS: 2

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
aia0096_template____28.pdf	3	Assignee showing of ownership per 37 CFR 3.73	120 KB
aia0081a_template____28.pdf	2	Power of Attorney	142 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
aia0096_template____28.pdf	B710B07C7450832FEC964D981ABEC3A86AAFEBC47D0AE6B 17B85A36A730848D6819CDEE1E908A5BEB591F81AB08388299 7C44BFD9B968B3AC6C637F2A5E18F3

aia0081a_template____28.pdf

21E65972411B87FED923207E81C46E700F2C9664AE41430DF0
CF1B04470CF4A4FE4709C9E1D5893CEE0353BA4E0B130D367
D148511906D5B8D2054748960180D

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Under the Paperwork Reduction Act of 1995 no persons are required to respond to a collection of information unless it displays a valid OMB control number

PATENT - POWER OF ATTORNEY OR REVOCATION OF POWER OF ATTORNEY WITH A NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS	Patent Number	7,738,471
	Issue Date	6/15/2010
	First Named Inventor	Kuliner, Mitel (Rochester, NY, US)
	Title	High speed packet processing in a wireless network
	Attorney Docket No.	

I hereby revoke all previous powers of attorney given in the above-identified patent.

☐ A Power of Attorney is submitted herewith.**OR**☒ I hereby appoint Practitioner(s) associated with the Customer Number identified in the box at right as my/our attorney(s) or agent(s) with respect to the patent identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

199393

OR☐ I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) with respect to the patent identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

Practitioner(s) Name	Registration Number

Please recognize or change the correspondence address for the above-identified patent to:

☒ The address associated with the above-identified Customer Number.**OR**☐ The address associated with the Customer Number identified in the box at right:

199393

OR☐ Firm or
Individual Name

Address

City

State

Zip

Country

Telephone

Email

I am the:

☐ Applicant.**OR**☒ Patent owner.

Statement under 37 CFR 3.73(c) (Form PTO/AIA/96) submitted herewith or filed on _____.

SIGNATURE of Applicant or Patent Owner

Signature	/Ciaran O'Gara/	Date	May 1, 2024
Name	Ciaran O'Gara	Telephone	
Title and Company	Director LIONRA TECHNOLOGIES LTD.		

NOTE: Signatures of all the applicants or patent owners of the entire interest or their representative(s) are required. If more than one signature is required, submit multiple forms, check the box below, and identify the total number of forms submitted in the blank below.

☐ A total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public, which is to update (and by the USPTO to process) the file of a patent or reexamination proceeding. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/855,714	06/15/2010	7738471	7162-0233US0	7436

68085 7590 05/26/2010
HARRIS CORPORATION
C/O FOX ROTHSCHILD, LLP
997 Lenox Drive
Building 3
Lawrenceville, NJ 08543-5231

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 402 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Mitel Kuliner, Rochester, NY;

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

68085 7590 04/22/2010

HARRIS CORPORATION
C/O FOX ROTHSCHILD, LLP
997 Lenox Drive
Building 3
Lawrenceville, NJ 08543-5231

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/855,714	09/14/2007	Mitel Kuliner	17162/0208025-USO	7436

TITLE OF INVENTION: HIGH SPEED PACKET PROCESSING IN A WIRELESS NETWORK

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	07/22/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
PEZZLO, JOHN	2465	370-389000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list
(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

FOX ROTHSCHILD, LLP
1
ROBERT J. SACCO
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

HARRIS CORPORATION

MELBOURNE, FL

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☒ Issue Fee
☒ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 080870 (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature

Date 5-3-2010

Typed or printed name ROBERT J. SACCO

Registration No. 35,667

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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Electronic Patent Application Fee Transmittal				
Application Number:		11855714		
Filing Date:		14-Sep-2007		
Title of Invention:		HIGH SPEED PACKET PROCESSING IN A WIRELESS NETWORK		
First Named Inventor/Applicant Name:		Mitel Kuliner		
Filer:		Robert Joseph Sacco/Joyce Dougherty		
Attorney Docket Number:		17162/0208025-US0		
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl issue fee	1501	1	1510	1510
Publ. Fee- early, voluntary, or normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1810

Electronic Acknowledgement Receipt	
EFS ID:	7538159
Application Number:	11855714
International Application Number:	
Confirmation Number:	7436
Title of Invention:	HIGH SPEED PACKET PROCESSING IN A WIRELESS NETWORK
First Named Inventor/Applicant Name:	Mitel Kuliner
Customer Number:	68085
Filer:	Robert Joseph Sacco/Joyce Dougherty
Filer Authorized By:	Robert Joseph Sacco
Attorney Docket Number:	17162/0208025-US0
Receipt Date:	03-MAY-2010
Filing Date:	14-SEP-2007
Time Stamp:	16:08:02
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$1810
RAM confirmation Number	2658
Deposit Account	080870
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	int641.PDF	62660	no	1
			33aee491e82fa5f92274083852395ed9065d47dc		
Warnings:					
Information:					
2	Fee Worksheet (PTO-875)	fee-info.pdf	32008	no	2
			17fa1eb4e2e97c0cff50eb8058040f59d86328b4		
Warnings:					
Information:					
Total Files Size (in bytes):			94668		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					



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NOTICE OF ALLOWANCE AND FEE(S) DUE

68085 7590 04/22/2010

HARRIS CORPORATION
C/O FOX ROTHSCHILD, LLP
997 Lenox Drive
Building 3
Lawrenceville, NJ 08543-5231

EXAMINER

PEZZLO, JOHN

ART UNIT

PAPER NUMBER

2465

DATE MAILED: 04/22/2010

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/855,714	09/14/2007	Mitel Kuliner	17162/0208025-US0	7436

TITLE OF INVENTION: HIGH SPEED PACKET PROCESSING IN A WIRELESS NETWORK

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	07/22/2010

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
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Alexandria, Virginia 22313-1450
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

68085 7590 04/22/2010

HARRIS CORPORATION
C/O FOX ROTHSCHILD, LLP
997 Lenox Drive
Building 3
Lawrenceville, NJ 08543-5231

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Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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11/855,714	09/14/2007	Mitel Kuliner	17162/0208025-US0	7436
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TITLE OF INVENTION: HIGH SPEED PACKET PROCESSING IN A WIRELESS NETWORK

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
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nonprovisional	NO	\$1510	\$300	\$0	\$1810	07/22/2010
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EXAMINER	ART UNIT	CLASS-SUBCLASS
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PEZZLO, JOHN	2465	370-389000
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1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
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- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/855,714	09/14/2007	Mitel Kuliner	17162/0208025-US0	7436
68085	7590	04/22/2010	EXAMINER	
HARRIS CORPORATION C/O FOX ROTHSCHILD, LLP 997 Lenox Drive Building 3 Lawrenceville, NJ 08543-5231			PEZZLO, JOHN	
			ART UNIT	PAPER NUMBER
			2465	
			DATE MAILED: 04/22/2010	

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 402 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 402 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

DETAILED ACTION

Reasons for Allowance

The following is an examiner's statement of reasons for allowance: Applicants have claimed uniquely distinct features in the instant invention, which are not found in the prior art, either singularly or in combination. The independent claim identifies the following uniquely distinct features:

1. Regarding claim 1 - A method for processing a packet at an egress end user node, comprising: decoding a packet having a plurality of headers, and subsequent to said decoding step, concurrently writing (1) each of said plurality of headers to a packet buffer memory and (2) each individual one of said plurality of headers to a respective protocol stack layer memory where it is available for immediate processing within a protocol stack layer.
2. Regarding claim 13 – An egress end user node (EEUN) of a packet based communications system, comprising: a decoder configured for decoding a packet having a plurality of headers, and a direct memory access (DMA) device coupled to said decoder and configured for concurrently writing (1) each of said plurality of headers to a packet buffer memory and (2) each individual one of said plurality of headers to a respective protocol stack layer memory where it is available for immediate processing within a protocol stack layer.

The closest prior art, either singularly or in combination, fail to anticipate or render the above limitations obvious.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Allowable Subject Matter

Claims 1-22 are allowable over the prior art of record.

Conclusion

Claims 1-22 being allowable, **Prosecution On The Merits Is Closed** in this application.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1. Tan et al. (US 7,328,283 B2) discloses header compression/decompression apparatus and header compression and decompression method.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Pezzlo whose telephone number is (571) 272-3090. The examiner can normally be reached on Monday to Friday from 8:30 AM to 4:30 PM.

Application/Control Number: 11/855,714
Art Unit: 2465

Page 4

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel, can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2600.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C.

or faxed to:

(571) 273-8300

For informal or draft communications, please label "PROPOSED" or "DRAFT"

Hand delivered responses should be brought to:

Jefferson Building

2A15

500 Dulany Street

Alexandria, VA, 22313.

John Pezzlo

17 April 2010

/John Pezzlo/

Primary Examiner, Art Unit 2465

Notice of References Cited	Application/Control No. 11/855,714	Applicant(s)/Patent Under Reexamination KULINER, MITEL	
	Examiner John Pezzlo	Art Unit 2465	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-7,328,283 B2	02-2008	Tan et al.	709/247
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

<i>Index of Claims</i> 	Application/Control No. 11855714	Applicant(s)/Patent Under Reexamination KULINER, MITEL
	Examiner John Pezzlo	Art Unit 2465

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant
 ☐ CPA
 ☐ T.D.
 ☐ R.1.47

CLAIM		DATE									
Final	Original	12/15/2009	04/17/2010								
	1	✓	=								
	2	✓	=								
	3	✓	=								
	4	✓	=								
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	20	✓	=								
	21	✓	=								
	22	✓	=								

Issue Classification 	Application/Control No. 11855714	Applicant(s)/Patent Under Reexamination KULINER, MITEL
	Examiner John Pezzlo	Art Unit 2465

ORIGINAL						INTERNATIONAL CLASSIFICATION														
CLASS			SUBCLASS			CLAIMED					NON-CLAIMED									
370			412			H	0	4	L	12 / 56 (2006.01.01)					H	0	4	J	1 / 16 (2006.01.01)	
CROSS REFERENCE(S)																				
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)																			
370	352	389	401																	

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
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	2		18												
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NONE		Total Claims Allowed:	
		22	
(Assistant Examiner)	(Date)		
/John Pezzlo/ Primary Examiner.Art Unit 2465	4/17/10	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	4

Search Notes 	Application/Control No. 11855714	Applicant(s)/Patent Under Reexamination KULINER, MITEL
	Examiner John Pezzlo	Art Unit 2465

SEARCHED			
Class	Subclass	Date	Examiner
370	352-356, 400, 401, 389	12/14/09	JP
370	352-356, 400, 401, 389, 412	4/17/10	JP

SEARCH NOTES		
Search Notes	Date	Examiner
Refer to EAST search	12/14/09	JP
Refer to EAST search	4/17/10	JP

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner
370	352, 389, 401, 412	4/17/10	JP

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BIB DATA SHEET

CONFIRMATION NO. 7436

SERIAL NUMBER 11/855,714	FILING or 371(c) DATE 09/14/2007 RULE	CLASS 370	GROUP ART UNIT 2465	ATTORNEY DOCKET NO. 17162/0208025-US0		
APPLICANTS Mitel Kuliner, Rochester, NY; ** CONTINUING DATA ***** ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 10/30/2007						
Foreign Priority claimed ☐ Yes ☒ No 35 USC 119(a-d) conditions met ☐ Yes ☒ No Verified and Acknowledged <u>/JOHN PEZZLO/</u> Examiner's Signature		☐ Met after Allowance Initials	STATE OR COUNTRY NY	SHEETS DRAWINGS 5	TOTAL CLAIMS 22	INDEPENDENT CLAIMS 2
ADDRESS HARRIS CORPORATION C/O FOX ROTHSCHILD, LLP 997 Lenox Drive Building 3 Lawrenceville, NJ 08543-5231 UNITED STATES						
TITLE High Speed packet Processing in a Wireless Network						
FILING FEE RECEIVED 1100	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit			

EAST Search History**EAST Search History (Prior Art)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	0	packet and headers and ((writing or storing) near headers near (memory or fifo or ram or storage)) and (headers near layer)	US-PGPUB; USPAT	OR	OFF	2010/04/16 14:53
S2	2	packet and headers and ((writing or storing) near headers near (memory or fifo or ram or storage))	US-PGPUB; USPAT	OR	OFF	2010/04/16 14:54
S3	1242	packet and headers and ((encapsulation or decoding) near (header or packet)) and (layer or stack)	US-PGPUB; USPAT	OR	OFF	2010/04/16 14:57
S4	1	S3 and ((storing or writing) near header near (memory or stack or fifo or ram or storage or database))	US-PGPUB; USPAT	OR	OFF	2010/04/16 14:59
S5	0	S3 and (header near (stack near layer))	US-PGPUB; USPAT	OR	OFF	2010/04/16 15:04
S6	50	S3 and (protocol near stack near layer)	US-PGPUB; USPAT	OR	OFF	2010/04/16 15:05

EAST Search History (Interference)

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4/ 17/ 10 7:40:27 AM

EAST Search History**EAST Search History (Prior Art)**

< This search history is empty >

EAST Search History (I nterference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	0	370/352,389,401,412.ccls. and decoding and packet and headers and ((writing or storing) near headers near (memory or ram or fifo or storage)) and (protocol near stack near layer)	USPAT; UPAD	OR	OFF	2010/04/17 08:12
L2	0	370/352,389,401,412.ccls. and decoding and packet and headers and ((writing or storing) near headers near (memory or ram or fifo or storage))	USPAT; UPAD	OR	OFF	2010/04/17 08:12

4/ 17/ 10 8:12:53 AM**C:\ Program Files\ USPTO\ EAST\ Bin\ default.wsp**

Docket No.: 17162/0208025-US0
RF-406
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Mitel Kuliner

Application No.: 11/855,714

Confirmation No.: 7436

Filed: September 14, 2007

Art Unit: 2465

For: HIGH SPEED PACKET PROCESSING IN A
WIRELESS NETWORK

Examiner: J. Pezzlo

RESPONSE TO NON-FINAL OFFICE ACTION

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

INTRODUCTORY COMMENTS

In response to the Office Action dated December 21, 2009, please consider the following remarks and arguments.

Remarks/Arguments begin on page 2 of this paper.

REMARKS

These remarks are in response to the Office Action dated December 21, 2009. This reply is timely filed. At the time of the Office Action, claims 1-22 were pending in the application.

I. Status of the Claims

Claims 1-22 have been rejected under 35 U.S.C. 102(b). The rejections are set out in more detail below.

II. Claim Rejections Under 35 U.S.C. §102(b)

Claims 1-22 have been rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pub. No. 2001/0037397 to Boucher et al. (hereinafter “Boucher”). Boucher describes a system that is intended to increase the speed of a connection based, layered architecture. Boucher accomplishes this by generating a communication control block (CCB) for a class of message packets. The CCB summarizes certain aspects of the connection for that class of packet.¹ Thereafter, when subsequent packets are received from the same connection, the headers of those packets are parsed to create a summary and a hash is used for finding a corresponding CCB.² Boucher, paragraph [0069]. If such a match is found, the data contained in the packet is sent directly via a “fast path” to its destination in a storage device in accordance with the CCB. Accordingly, packets bypass the various layers of a communication stack (such as a session layer, transport layer, network layer and data link layer) when they are recognized as corresponding to a particular CCB. In this way, Boucher allows packets to avoid the relatively slow protocol layer processing.

Boucher also teaches that some packets may not be suitable for fast-path processing. In such cases, the packet is processed by the host protocol stack of data link, network, transport and session layers.³ Boucher does not describe such processing in any detail, but it appears that Boucher envisions conventional protocol stack processing in such cases.

¹ See Boucher at paragraph [0042]

² See Boucher at paragraph [0069]

³ See Boucher at paragraph [0067]

Applicant notes that the Examiner has rejected claims 1-22 under 35 U.S.C. §102(b) based on Boucher. However, Boucher does not teach the combination of steps recited in Applicant's independent claim 1. For example, Boucher does not teach the step of concurrently writing "each individual one of said plurality of headers to a respective protocol stack layer memory where it is available for immediate processing within a protocol stack layer."⁴

In support of his rejection, the Examiner makes reference to Boucher Figures 1 and 2, and paragraphs [0004] to [0007], [0052], [0061], [0067] and [0068]. However, Applicant has carefully reviewed these and other portions of Boucher and finds nothing therein which discloses or suggests the foregoing limitation in claim 1.

Paragraphs [0004] to [0007] seem to describe background material relating to network communications. Paragraph [0052] discussed some details of the logic circuits and microprocessor that may be included in Boucher's CPD, but do not discuss writing "each individual one of said plurality of headers to a respective protocol stack layer memory where it is available for immediate processing within a protocol stack layer."

Paragraph [0061] of Boucher describes how memory controller 108 moves data from each message packet, without the headers or descriptors, from the initial storage location in DRAM 105 to the destination, to be used for example by an application. Accordingly, the referenced paragraph does not teach writing "each individual one of said plurality of headers to a respective protocol stack layer memory where it is available for immediate processing within a protocol stack layer."

Paragraphs [0067]-[0068] of Boucher respectively describe processing of a message packet in a first scenario where the packet is not a "fast-path" candidate, and a second scenario where the packet is a candidate for "fast-path" processing. Neither scenario suggests the step recited in claim 1 involving the writing of each individual one of a plurality of headers to a respective protocol stack layer memory. Regarding slow-path processing, paragraph [0067] states that:

⁴ See paragraphs [0029] and [0030] of Applicant's specification, and Claim 1

. . . the CPD 30 sends the validated headers and data from memory 60 to data link layers 36 along an internal bus for processing by the host CPU as shown by arrow 56. The packet is processed by the host protocol stack 44 of data link 36, network 38, transport 40 and session 42 layers, and data from the packet may then be sent to storage. . .

At best, the cited portion of Boucher merely suggests that slow-path packets are passed to the host protocol stack for processing. It does not suggest concurrently writing each individual one of a plurality of headers to a respective protocol stack layer memory. Notably, Boucher provides little in the way of description relating to how such slow-path processing is to be performed once packets are delivered to the host protocol stack or what memory resources are used for such processing. To the extent that Boucher does describe such processing, it appears to be a conventional arrangement. For example, Boucher notes that the TCP/IP protocol stack provides a slow-path 158 for sequential software processing of message frames received from the network 155.⁵ Such reference to “sequential software processing” suggests that the protocol stack in Boucher is a conventional arrangement in which processing proceeds sequentially from one layer to the next. Such an arrangement is entirely different from the system recited in Applicant’s claim 1, where each individual one of a plurality of headers in a packet are written concurrently to a respective protocol stack layer memory location.

Paragraph [0068] of Boucher describes fast-path processing as discussed above. Fast-path processing uses a CCB to determine a destination for a packet in essentially one step, effectively bypassing the protocol stack entirely. However, Boucher’s arrangement has little in common with the invention recited in Applicant’s claim 1, which still makes use of the protocol stack for all processing. Most importantly, paragraph [0069] does not teach or suggest that each individual one of a plurality of headers in a packet are written concurrently to a respective protocol stack layer memory location.

Further, Boucher does not teach (1) writing each of a plurality of headers to packet buffer memory concurrently with (2) writing each individual one of a plurality of headers to a respective protocol stack layer memory. Boucher fails to teach this feature in either his fast-path or

⁵ See paragraph [0074] of Boucher

slow-path arrangement. As noted above, Boucher teaches at most that packets are transferred to a protocol stack for processing.⁶ Boucher says nothing about writing each of a plurality of headers to packet buffer memory concurrently with (2) writing each individual one of a plurality of headers to a respective protocol stack layer memory.

In view of the foregoing, Applicant respectfully submits that claim 1 is not anticipated by Boucher. Independent claim 13 is similar to claim 1, and for similar reasons is not anticipated by Boucher. With regard to dependent claims 2-12 and 14-22, Applicant submits that such claims are allowable at least by virtue of their dependence upon allowable base claims 1 and 13, respectively.

III. Conclusion

Applicant has made every effort to present claims which distinguish over the prior art, and it is believed that all claims are in condition for allowance. Nevertheless, Applicant invites the Examiner to call the undersigned if it is believed that a telephonic interview would expedite the prosecution of the application to an allowance. In view of the foregoing remarks, Applicant respectfully requests reconsideration and prompt allowance of the pending claims. Please charge any deficiencies, or credit any overpayment to Deposit Account 08-0870.

March 3, 2010
Date

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⁶ See paragraph [0067] of Boucher

Electronic Acknowledgement Receipt	
EFS ID:	7131803
Application Number:	11855714
International Application Number:	
Confirmation Number:	7436
Title of Invention:	High Speed packet Processing in a Wireless Network
First Named Inventor/Applicant Name:	Mitel Kuliner
Customer Number:	68085
Filer:	Robert Joseph Sacco/Joyce Dougherty
Filer Authorized By:	Robert Joseph Sacco
Attorney Docket Number:	17162/0208025-US0
Receipt Date:	03-MAR-2010
Filing Date:	14-SEP-2007
Time Stamp:	14:45:41
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		AMEND.pdf	37015	yes	5
			b2c4203502a68a0d83d5cf2677bb6cb293c8c9d5		

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Applicant Arguments/Remarks Made in an Amendment	2	5
Warnings:			
Information:			
Total Files Size (in bytes):		37015	
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.			

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 11/855,714		Filing Date 09/14/2007		☐ To be Mailed	
APPLICATION AS FILED – PART I										
(Column 1)			(Column 2)			SMALL ENTITY ☐ OR		OTHER THAN SMALL ENTITY		
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	OR	RATE (\$)	FEE (\$)			
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A				
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A				
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A				
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X \$ =		OR	X \$ =				
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$ =			X \$ =				
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).									
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))										
* If the difference in column 1 is less than zero, enter "0" in column 2.										
APPLICATION AS AMENDED – PART II										
(Column 1)			(Column 2)			SMALL ENTITY OR		OTHER THAN SMALL ENTITY		
AMENDMENT	03/03/2010	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(o))	* 22	Minus	** 22	= 0	X \$ =		OR	X \$2= 0	
	Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X \$ =		OR	X \$220= 0	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))									
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	0
AMENDMENT	Total (37 CFR 1.16(o))	*	Minus	**	=	X \$ =		OR	X \$ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$ =		OR	X \$ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))									
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	
	* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.									
Legal Instrument Examiner: /LORRAINE WALDEN/										

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/855,714	09/14/2007	Mitel Kuliner	17162/0208025-US0	7436
68085 7590 12/21/2009 HARRIS CORPORATION C/O DARBY & DARBY PC P.O. BOX 770 CHURCH STREET STATION NEW YORK, NY 10008-0770			EXAMINER PEZZLO, JOHN	
			ART UNIT 2465	PAPER NUMBER
			MAIL DATE 12/21/2009	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.		Applicant(s)	
	11/855,714		KULINER, MITEL	
	Examiner		Art Unit	
	John Pezzlo		2465	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on ____.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-22 is/are pending in the application.

 4a) Of the above claim(s) ____ is/are withdrawn from consideration.

5) ☐ Claim(s) ____ is/are allowed.

6) ☒ Claim(s) 1-22 is/are rejected.

7) ☐ Claim(s) ____ is/are objected to.

8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 14 September 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some * c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. ____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892) 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>4/15/09, 9/14/07</u> .	4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____. 5) ☐ Notice of Informal Patent Application 6) ☐ Other: _____.
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DETAILED ACTION

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

I. Claims 1-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Boucher et al. (US 2001/0037397 A1) hereinafter Boucher.

1. Regarding claims 1 and 13 – Boucher discloses decoding a packet having a plurality of headers, and subsequent to said decoding step, concurrently writing (1) each of said plurality of headers to a packet buffer memory and (2) each individual one of said plurality of headers to a respective protocol stack layer memory where it is available for immediate processing within a protocol stack layer, refer to Figures 1 and 2 and paragraphs [0004] to [0007], [0052], [0061], [0067], and [0068]. Boucher discloses a host processor which includes storage (35 in Figure 1) and a CPD (30 in Figure 1) and a CPU (28 in Figure 1). The CPD decodes the packet and stores the packet in storage as shown in Figure 2 callout 35, also the CPD sends the packet headers to the protocol stack which is in the CPU refer to callout 44 in Figure 2.

2. Regarding claims 2 and 14 - Boucher discloses wherein at least one of said plurality of headers is a media access control layer protocol header and said respective protocol stack layer

memory is a media access control layer memory, refer to Figure 2 and paragraphs [0084], [0086], and [0096].

3. Regarding claims 3 and 15 – Boucher discloses wherein at least one of said plurality of headers is a logic link control layer protocol header and said respective protocol stack layer memory is a logic link control layer memory, refer to Figure 2 and paragraphs [0042] and [0043].

4. Regarding claims 4 and 16 – Boucher discloses wherein at least one of said plurality of headers is a network layer protocol header and said respective protocol stack layer memory is a media access control layer memory, refer to Figure 2 and paragraphs [0042], [0043], [0084], [0086], and [0096].

5. Regarding claims 5 and 17 – Boucher discloses wherein at least one of said plurality of headers is a network layer protocol header and said respective protocol stack layer memory is a network layer memory, refer to Figure 2 and paragraphs [0042] and [0043].

6. Regarding claims 6 and 18 – Boucher discloses wherein at least one of said plurality of headers is a transport layer protocol header and said respective protocol stack layer memory is a transport layer memory, refer to Figure 2 and paragraphs [0042] and [0043].

7. Regarding claims 7 and 19 – Boucher discloses wherein at least one of said plurality of headers is an application layer header and said respective protocol stack layer memory is an application layer memory, refer to Figure 2 and paragraphs [0042] and [0043].

8. Regarding claims 8 – Boucher discloses concurrently processing said plurality of headers in each of a plurality of protocol stack layers, refer to Figures 11A and 11B and 12 and paragraphs [0067] and [0068] and [0074] and [0075] and [0087].

9. Regarding claims 9 and 20 – Boucher discloses communicating a portion of said packet to a direct memory access (DMA) device subsequent to said decoding step and prior to said concurrently writing step, refer to Figure 2 and paragraphs [0042] and [0043] and [0062] and [0063].

10. Regarding claims 10 and 21 – Boucher discloses said portion is absent of a preamble and a physical layer header, refer to Figure 2 and paragraphs [0042] and [0043] and [0062] and [0063] and [0095] to [0097].

11. Regarding claims 11 and 22 – Boucher discloses following said decoding step, communicating a physical layer header to a physical layer memory where it is available for immediate processing within a physical layer, refer to Figures 4 and 20 and paragraphs [0052], [0062] and [0063] and [0095] to [0097].

12. Regarding claim 12 – Boucher discloses said concurrently writing step is performed within a physical layer utilizing a direct memory access (DMA) device, refer to Figures 4 and 20 and paragraphs [0052], [0062] and [0063] and [0095] to [0097].

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1. Boucher et al. (6,658,480 B2) discloses an intelligent network interface system and method for accelerated protocol processing.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Pezzlo whose telephone number is (571) 272-3090. The examiner can normally be reached on Monday to Friday from 8:30 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel, can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2600.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C.

Application/Control Number: 11/855,714
Art Unit: 2465

Page 6

or faxed to:

(571) 273-8300

For informal or draft communications, please label "PROPOSED" or "DRAFT"

Hand delivered responses should be brought to:

Jefferson Building

2A15

500 Dulany Street

Alexandria, VA, 22313.

John Pezzlo

15 December 2009

/John Pezzlo/

Primary Examiner, Art Unit 2465

Notice of References Cited	Application/Control No. 11/855,714	Applicant(s)/Patent Under Reexamination KULINER, MITEL	
	Examiner John Pezzlo	Art Unit 2465	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2001/0037397 A1	11-2001	Boucher et al.	709/230
*	B	US-6,658,480 B2	12-2003	Boucher et al.	709/239
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.



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BIB DATA SHEET

CONFIRMATION NO. 7436

SERIAL NUMBER 11/855,714	FILING or 371(c) DATE 09/14/2007 RULE	CLASS 370	GROUP ART UNIT 2465	ATTORNEY DOCKET NO. 17162/0208025-US0		
APPLICANTS Mitel Kuliner, Rochester, NY; ** CONTINUING DATA ***** ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 10/30/2007						
Foreign Priority claimed ☐ Yes ☒ No 35 USC 119(a-d) conditions met ☐ Yes ☒ No Verified and Acknowledged <u>/JOHN PEZZLO/</u> Examiner's Signature		☐ Met after Allowance Initials	STATE OR COUNTRY NY	SHEETS DRAWINGS 5	TOTAL CLAIMS 22	INDEPENDENT CLAIMS 2
ADDRESS HARRIS CORPORATION C/O DARBY & DARBY PC P.O. BOX 770 CHURCH STREET STATION NEW YORK, NY 10008-0770 UNITED STATES						
TITLE High Speed packet Processing in a Wireless Network						
FILING FEE RECEIVED 1100	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:			☐ All Fees		
				☐ 1.16 Fees (Filing)		
				☐ 1.17 Fees (Processing Ext. of time)		
				☐ 1.18 Fees (Issue)		
				☐ Other _____		
			☐ Credit			

EAST Search History**EAST Search History (Prior Art)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	168	packets and (node or router) and headers and (memory or storage) and (protocol near (stack or layer)) and (processing near protocol near (layer or stack))	US-PGPUB; USPAT	OR	OFF	2009/12/13 10:01
L2	2	1 and (mac near layer near header)	US-PGPUB; USPAT	OR	OFF	2009/12/13 10:02

EAST Search History (I nterference)

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EAST Search History**EAST Search History (Prior Art)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1063	"1" and (plurality near headers)	US- PGPUB; USPAT	OR	OFF	2009/12/13 14:11
L2	168	packets and (node or router) and headers and (memory or storage) and (protocol near (stack or layer)) and (processing near protocol near (layer or stack))	US- PGPUB; USPAT	OR	OFF	2009/12/13 14:12
L3	5	2 and (plurality near headers)	US- PGPUB; USPAT	OR	OFF	2009/12/13 14:13

EAST Search History (Interference)

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<i>Index of Claims</i> 	Application/Control No. 11855714	Applicant(s)/Patent Under Reexamination KULINER, MITEL
	Examiner John Pezzlo	Art Unit 2465

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant
 ☐ CPA
 ☐ T.D.
 ☐ R.1.47

CLAIM		DATE									
Final	Original	12/15/2009									
	1	✓									
	2	✓									
	3	✓									
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	18	✓									
	19	✓									
	20	✓									
	21	✓									
	22	✓									

<i>Search Notes</i> 	Application/Control No. 11855714	Applicant(s)/Patent Under Reexamination KULINER, MITEL
	Examiner John Pezzlo	Art Unit 2465

SEARCHED			
Class	Subclass	Date	Examiner
370	352-356, 400, 401, 389	12/14/09	JP

SEARCH NOTES		
Search Notes	Date	Examiner
Refer to EAST search	12/14/09	JP

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

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EAST Search History**EAST Search History (Prior Art)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	3	((("20060104303") or ("20010053148") or ("20020147839")).PN.	US-PGPUB; USPAT	OR	OFF	2009/12/14 10:25

EAST Search History (I nterference)

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EAST Search History**EAST Search History (Prior Art)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	4	((("6963586") or ("20020136202") or ("20070005925") or ("20070006293")).PN.	US-PGPUB; USPAT	OR	OFF	2009/12/14 10:38

EAST Search History (I nterference)

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12/ 14/ 09 10:53:35 AM**C:\ Program Files\ USPTO\ EAST\ Bin\ default.wsp**

EAST Search History**EAST Search History (Prior Art)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	0	(plurality near headers) and packets and (writing near headers near (buffer or storage or memory)) and (headers near protocol near stack)	US-PGPUB; USPAT	OR	OFF	2009/12/14 15:41

EAST Search History (Interference)

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Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				Application Number	11/855,714-Conf. #7436
				Filing Date	September 14, 2007
				First Named Inventor	Mitel Kuliner
				Art Unit	N/A 2465
				Examiner Name	Not Yet Assigned
Sheet	2	of	2	Attorney Docket Number	17162/0208025-US0

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²

Examiner Signature	/John Pezzlo/	Date Considered	12/13/2009
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹Applicant's unique citation designation number (optional). ²Applicant is to place a check mark here if English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /JP/

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		
	First Named Inventor	KULINER	
	Art Unit		
	Examiner Name	2465	
	Attorney Docket Number	7162-0233	

U.S. PATENTS							Remove	
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear		
	1	6963586		2005-11-08	HENRIKSSON ET AL.			
If you wish to add additional U.S. Patent citation information please click the Add button.							Add	
U.S. PATENT APPLICATION PUBLICATIONS							Remove	
Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear		
	1	20020136202		2002-09-26	DROZ ET AL.			
	2	20070005925		2007-01-04	BURKLEY ET AL.			
	3	20070006293		2007-01-04	BALAKRISHNAN ET AL.			
If you wish to add additional U.S. Published Application citation information please click the Add button.							Add	
FOREIGN PATENT DOCUMENTS							Remove	
Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ²	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵
	1							☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		
	First Named Inventor	KULINER	
	Art Unit	2465	
	Examiner Name		
	Attorney Docket Number	7162-0233	

If you wish to add additional Foreign Patent Document citation information please click the Add button

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
	1		☐

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature	/John Pezzlo/	Date Considered	12/13/2009
--------------------	---------------	-----------------	------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		
	First Named Inventor	KULINER	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	7162-0233	

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☐ None

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature		Date (YYYY-MM-DD)	
Name/Print		Registration Number	

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /JP/

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Mitel Kuliner

Application No.: 11/855,714

Confirmation No.: 7436

Filed: September 14, 2007

Art Unit: N/A

For: HIGH SPEED PACKET PROCESSING IN A
WIRELESS NETWORK

Examiner: Not Yet Assigned

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT (IDS)

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Madam:

This Information Disclosure Statement is submitted in accordance with 37 C.F.R. 1.97, 1.98, and it is requested that the information set forth in this statement and in the listed documents be considered during the pendency of the above-identified application, and any other application relying on the filing date of the above-identified application or cross-referencing it as a related application.

1. This IDS should be considered, in accordance with 37 C.F.R. 1.97, as it is filed:
(Check one of the boxes A-D)

- ☐ A. within three months of the filing date of the above-identified national application or within three months of the entry into the national stage of the above identified national application
- ☒ B. before the mailing date of a first office action on the merits, or a first office action after filing a request for continued examination.
- ☐ C. after (A) and (B) above, but before final rejection or allowance, and Applicants have made the necessary statement in box "i" below or paid the necessary fee in box "ii" below.

(check one of the boxes “i” and “ii” below:)

- ☐ i. Counsel states that, upon information and belief, each item of information listed herein was (check one of boxes (a) or (b))
- ☐ (a) first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this IDS; or
- ☐ (b) not cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of undersigned after making reasonable inquiry, was not known to any individual designated in 1.56(c) more than three months prior to the filing of this IDS.
- ☐ ii. Payment in the amount of the fee set forth in 1.17(p), presently \$180, is enclosed.

- ☐ D. after (A), (B) and (C) above, but before payment of the issue fee: Applicant petitions under 37 C.F.R. 1.97(d) for the consideration of this IDS. Payment in the amount of the fee set forth in 1.17(p), presently \$180.00 is enclosed. Counsel certifies that, upon information and belief, each item of information listed herein was

(check one of the boxes “a” and “b” below:)

- ☐ (a) first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this IDS; or
- ☐ (b) was not cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of undersigned after making reasonable inquiry, was not known to any individual designated in 1.56(c) more than three months prior to the filing of this IDS.

2. In accordance with 37 C.F.R. 1.98, this IDS includes a list (e.g., form PTO/SB/08) of all patents, publications, or other information submitted for consideration by the office, either incorporated into this IDS or as an attachment hereto. A copy of each document listed is attached, except for U.S. patents or U.S. patent applications or as explained below.

(check box A or B and fill in blanks, if appropriate.)

- ☐ A. Document(s) _____ is (are) deemed substantially cumulative to document(s) _____, and, in accordance with 1.98(c), only a copy of each of the latter documents is enclosed.
- ☐ B. Certain documents were previously cited by or submitted to the Office in the following prior applications, which are relied upon under 35 U.S.C. 120:

<<INSERT SERIAL NO. & FILING DATE>>

Applicant identifies these documents by attaching hereto copies of the forms PTO-892, PTO-1449 and/or PTO/SB/08 from the files of the prior application(s) or a fresh PTO/SB/08 listing these documents, and request that they be considered and made of record in accordance with 1.98(d). Per 37 CFR 1.98(d), copies of these documents need not be filed in this application.

- ☐ 3. Cite Nos. _____ are not in the English language. In accordance with 1.98(b)(3), Applicant states:
- ☐ An English translation of each document (or of the pertinent portions thereof), or a copy of each corresponding English-language patent or application, or English-language abstract (or claim) is enclosed.
- ☐ The requirement for a concise explanation of the relevance of any foreign language document is satisfied by the attached search report; citation of the documents cited in the search report shall not be construed as an admission that they are or are considered to be, material to patentability of the subject matter claimed herein (See MPEP §609).
- ☐ A concise explanation of the relevance of document(s) _____ is set forth as follows: [Insert concise explanation of relevance]
- ☐ A concise explanation of the relevance of document(s) _____ can be found on page(s) _____ of the specification.
- ☐ A concise explanation of document(s) _____ can be found on the attached sheet.

- ☐ 4. No explanation of relevance is necessary for documents in the English language (see reply to Comments 67 in the preamble to the final rules; 1135 OG 13 at 20).
- ☒ 5. Other information being provided for the examiner's consideration follows:

An International Search Report dated March 19, 2009, which issued during the prosecution of International Application No. PCT/US2008/075927 which corresponds to the present application.

6. In accordance with 37 C.F.R. 1.97(g) and (h), the filing of this IDS should not be construed as a representation that a search has been made or that information cited is, or is considered to be, material to patentability as defined in §1.56 (b), or that any cited document listed or attached is (or constitutes) prior art. Unless other-wise indicated, the date of publication indicated for an item is taken from the face of the item and Applicant reserves the right to prove that the date of publication is in fact different.

Early and favorable consideration is earnestly solicited.

The Commissioner is authorized to charge any deficiency of up to \$300.00 or credit any excess in this fee due with this submission to Deposit Account No. 08-0870.

Dated: April 15, 2009

Respectfully submitted,

By /Carol E. Thorstad Forsyth 56,455/

Robert J. Sacco

Registration No.: 35,667

DARBY & DARBY P.C.

P.O. Box 770

Church Street Station

New York, New York 10008-0770

(212) 527-7700

(212) 527-7701 (Fax)

Attorneys/Agents For Applicant

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				Complete if Known	
				Application Number	11/855,714-Conf. #7436
				Filing Date	September 14, 2007
				First Named Inventor	Mitel Kuliner
				Art Unit	N/A
				Examiner Name	Not Yet Assigned
				Attorney Docket Number	17162/0208025-USO
Sheet	1	of	2		

[illegible]

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T
		Country Code ³ -Number ⁴ -Kind Code ⁵ (<i>if known</i>)				

Examiner Signature		Date Considered	
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EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. * CITE NO.: Those application(s) which are marked with an single asterisk (*) next to the Cite No. are not supplied (under 37 CFR 1.98(a)(2)(iii)) because that application was filed after June 30, 2003 or is available in the IFW. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				Complete if Known	
				Application Number	11/855,714-Conf. #7436
				Filing Date	September 14, 2007
				First Named Inventor	Mitel Kuliner
				Art Unit	N/A
				Examiner Name	Not Yet Assigned
				Attorney Docket Number	17162/0208025-USO
Sheet	2	of	2		

[illegible]

Examiner Signature		Date Considered	
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹Applicant's unique citation designation number (optional). ²Applicant is to place a check mark here if English language Translation is attached.

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT AND
THE WRITTEN OPINION OF THE INTERNATIONAL
SEARCHING AUTHORITY, OR THE DECLARATION

To: HARRIS CORPORATION Attn. Yatsko, Michael S. M/S A-21 1025 West Nasa Boulevard Melbourne, FL 32919 ETATS-UNIS D'AMERIQUE

(PCT Rule 44.1)

Date of mailing (day/month/year)	19/03/2009
Applicant's or agent's file reference RF-406	FOR FURTHER ACTION See paragraphs 1 and 4 below
International application No. PCT/US2008/075927	International filing date (day/month/year) 11/09/2008
Applicant HARRIS CORPORATION	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

When? The time limit for filing such amendments is normally two months from the date of transmittal of the International Search Report.

Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes
1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 338.82.70

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.
3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:
- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
- ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the International Searching Authority  European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Alena Kastlova
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NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the *PCT Applicant's Guide*, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report and the written opinion of the International Searching Authority, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only (see *PCT Applicant's Guide*, Volume I/A, Annexes B1 and B2).

The attention of the applicant is drawn to the fact that amendments to the claims under Article 19 are not allowed where the International Searching Authority has declared, under Article 17(2), that no international search report would be established (see *PCT Applicant's Guide*, Volume I/A, paragraph 296).

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments and any accompanying statement, under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the time of filing the amendments (and any statement) with the International Bureau, also file with the International Preliminary Examining Authority a copy of such amendments (and of any statement) and, where required, a translation of such amendments for the procedure before that Authority (see Rules 55.3(a) and 62.2, first sentence). For further information, see the Notes to the demand form (PCT/IPEA/401).

If a demand for international preliminary examination is made, the written opinion of the International Searching Authority will, except in certain cases where the International Preliminary Examining Authority did not act as International Searching Authority and where it has notified the International Bureau under Rule 66.1bis(b), be considered to be a written opinion of the International Preliminary Examining Authority. If a demand is made, the applicant may submit to the International Preliminary Examining Authority a reply to the written opinion together, where appropriate, with amendments before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later (Rule 43bis.1(c)).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see the *PCT Applicant's Guide*, Volume II.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference RF-406	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US2008/075927	International filing date (<i>day/month/year</i>) 11/09/2008	(Earliest) Priority Date (<i>day/month/year</i>) 14/09/2007
Applicant HARRIS CORPORATION		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of:

- ☒ the international application in the language in which it was filed
☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (See Box No. II)

3. ☐ **Unity of invention is lacking** (see Box No III)

4. With regard to the **title**,

- ☒ the text is approved as submitted by the applicant
☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

- ☒ the text is approved as submitted by the applicant
☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No. 1

- ☒ as suggested by the applicant
☐ as selected by this Authority, because the applicant failed to suggest a figure
☐ as selected by this Authority, because this figure better characterizes the invention

b. ☐ none of the figures is to be published with the abstract

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2008/075927

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04L29/06 H04L12/56

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2002/147839 A1 (BOUCHER LAURENCE B [US] ET AL) 10 October 2002 (2002-10-10) abstract paragraph [0074] - paragraph [0075] paragraph [0128] paragraph [0130]	1-11
A	US 2001/053148 A1 (BILIC HRVOJE [IL] ET AL) 20 December 2001 (2001-12-20) paragraph [0058] - paragraph [0060] paragraph [0005]	1-11
A	US 2006/104303 A1 (MAKINENI SRIHARI [US] ET AL) 18 May 2006 (2006-05-18) abstract paragraph [0012] paragraph [0015] paragraph [0019] - paragraph [0020]	1-11



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

13 March 2009

Date of mailing of the international search report

19/03/2009

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Huber, Oliver

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2008/075927

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2002147839 A1	10-10-2002	NONE	
US 2001053148 A1	20-12-2001	NONE	
US 2006104303 A1	18-05-2006	AT 388574 T CN 101044737 A DE 602005005219 T2 EP 1813084 A1 WO 2006055494 A1	15-03-2008 26-09-2007 12-03-2009 01-08-2007 26-05-2006

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: see form PCT/ISA/220

PCT

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**
(PCT Rule 43bis.1)

Date of mailing (day/month/year) see form PCT/ISA/210 (second sheet)
--

Applicant's or agent's file reference see form PCT/ISA/220		FOR FURTHER ACTION See paragraph 2 below
International application No. PCT/US2008/075927	International filing date (day/month/year) 11.09.2008	Priority date (day/month/year) 14.09.2007
International Patent Classification (IPC) or both national classification and IPC INV. H04L29/06 H04L12/56		
Applicant HARRIS CORPORATION		

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Date of completion of this opinion see form PCT/ISA/210	Authorized Officer Huber, Oliver Telephone No. +49 89 2399-8967
---	--	---



**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2008/075927

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - ☒ the international application in the language in which it was filed
 - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).
2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ on paper
 - ☐ in electronic form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in electronic form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2008/075927

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>1-11</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	<u>1-11</u>
	No: Claims	
Industrial applicability (IA)	Yes: Claims	<u>1-11</u>
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item V.

- 1 Reference is made to the following documents:

D1 : US 2002/147839 A1 (BOUCHER LAURENCE B [US] ET AL) 10 October 2002 (2002-10-10)

D2 : US 2001/053148 A1 (BILIC HRVOJE [IL] ET AL) 20 December 2001 (2001-12-20)

D3 : US 2006/104303 A1 (MAKINENI SRIHARI [US] ET AL) 18 May 2006 (2006-05-18)

- 2 Document D1, which is considered to represent the most relevant state of the art, discloses (the references in parentheses applying to this document):

A method for processing a packet in an egress end user node which comprises:

- decoding a packet having a plurality of headers; and
- subsequent to said decoding step, writing each of said headers to a packet buffer memory.

From this, the subject-matter of independent claim 1 differs in that:

Concurrently writing each individual one of said plurality of headers to a respective protocol stack layer memory where it is available for immediate processing within a protocol stack layer.

- 2.1 The subject-matter of claim 1 is therefore novel (Article 33(2) PCT)
The problem to be solved by the present invention may be regarded as:

DMA devices are provided only for a one time transfer of a packet from the MAC layer memory to a CPU main memory. This single transfer does not solve the varying latencies and the increased processing consequences.

- 2.2 The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

This arrangement provides what is essentially a cross layer architecture framework. This approach facilitates a high data transfer rate by allowing

exchange of information between the protocol stack layers. In doing so, it reduces processing latency and thereby increases bandwidth.

2.3 Claims 2-6 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

3.1 Claim 7 is corresponding to claim 1 for the apparatus category. Thus the same reasoning applies as for claim 1.

3.2 Claims 8-11 are dependent on claim 7 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

Re Item VII.

Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1-D3 is not mentioned in the description, nor are these documents identified therein.

Re Item VIII.

The application does not meet the requirements of Article 6 PCT, because claim 1 is not clear.

It is clear from the description on page 8, lines 20-30 that the following feature is essential to the definition of the invention:

"communicating a portion of said packet to a **direct memory access device** subsequent to said decoding step and prior to said concurrently writing step."

Since independent claim 1 does not contain this feature it does not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.

Possible steps after receipt of the international search report (ISR) and written opinion of the International Searching Authority (WO-ISA)

General information	For all international applications filed on or after 01/01/2004 the competent ISA will establish an ISR. It is accompanied by the WO-ISA. Unlike the former written opinion of the IPEA (Rule 66.2 PCT), the WO-ISA is not meant to be responded to, but to be taken into consideration for further procedural steps. This document explains about the possibilities.
Amending claims under Art. 19 PCT	Within 2 months after the date of mailing of the ISR and the WO-ISA the applicant may file amended claims under Art. 19 PCT directly with the International Bureau of WIPO. The PCT reform of 2004 did not change this procedure. For further information please see Rule 46 PCT as well as form PCT/ISA/220 and the corresponding Notes to form PCT/ISA/220.
Filing a demand for international preliminary examination	In principle, the WO-ISA will be considered as the written opinion of the IPEA. This should, in many cases, make it unnecessary to file a demand for international preliminary examination. If the applicant nevertheless wishes to file a demand this must be done before expiry of 3 months after the date of mailing of the ISR/ WO-ISA or 22 months after priority date, whichever expires later (Rule 54bis PCT). Amendments under Art. 34 PCT can be filed with the IPEA as before, normally at the same time as filing the demand (Rule 66.1 (b) PCT). If a demand for international preliminary examination is filed and no comments/amendments have been received the WO-ISA will be transformed by the IPEA into an IPRP (International Preliminary Report on Patentability) which would merely reflect the content of the WO-ISA. The demand can still be withdrawn (Art. 37 PCT).
Filing informal comments	After receipt of the ISR/WO-ISA the applicant may file informal comments on the WO-ISA directly with the International Bureau of WIPO. These will be communicated to the designated Offices together with the IPRP (International Preliminary Report on Patentability) at 30 months from the priority date. Please also refer to the next box.
End of the international phase	At the end of the international phase the International Bureau of WIPO will transform the WO-ISA or, if a demand was filed, the written opinion of the IPEA into the IPRP, which will then be transmitted together with possible informal comments to the designated Offices. The IPRP replaces the former IPER (international preliminary examination report).
Relevant PCT Rules and more information	Rule 43 PCT, Rule 43bis PCT, Rule 44 PCT, Rule 44bis PCT, PCT Newsletter 12/2003, OJ 11/2003, OJ 12/2003

Electronic Acknowledgement Receipt	
EFS ID:	5158038
Application Number:	11855714
International Application Number:	
Confirmation Number:	7436
Title of Invention:	High Speed packet Processing in a Wireless Network
First Named Inventor/Applicant Name:	Mitel Kuliner
Customer Number:	68085
Filer:	Carol E. Thorstad Forsyth/Joyce Dougherty
Filer Authorized By:	Carol E. Thorstad Forsyth
Attorney Docket Number:	17162/0208025-US0
Receipt Date:	15-APR-2009
Filing Date:	14-SEP-2007
Time Stamp:	14:23:03
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Filed (SB/08)	IDS025.pdf	34344 524678180fcd88fa9228c23ee305c8436bc6800	no	4

Warnings:

Information:

This is not an USPTO supplied IDS fillable form					
2	Information Disclosure Statement (IDS) Filed (SB/08)	SB08025.pdf	41744 03449ee9913f42de9469314719bce3ff96d6b16	no	2
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
3	Foreign Reference	ISR025.PDF	604540 ca7b76b58c4e069a1c3e4924bec9371698010b18	no	12
Warnings:					
Information:					
Total Files Size (in bytes):			680628		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					



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United States Patent and Trademark Office
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www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/855,714	09/14/2007	Mitel Kuliner	17162/0208025-US0

CONFIRMATION NO. 7436

68085
HARRIS CORPORATION
C/O DARBY & DARBY PC
P.O. BOX 770
CHURCH STREET STATION
NEW YORK, NY 10008-0770

PUBLICATION NOTICE



OC000000035075857

Title:High Speed packet Processing in a Wireless Network

Publication No.US-2009-0074009-A1

Publication Date:03/19/2009

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently <http://pair.uspto.gov/>. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO.	TOT CLAIMS	IND CLAIMS
11/855,714	09/14/2007	2616	1100	17162/0208025-US0	22	2

CONFIRMATION NO. 7436

UPDATED FILING RECEIPT



OC000000026512064

68085
HARRIS CORPORATION
C/O DARBY & DARBY PC
P.O. BOX 770
CHURCH STREET STATION
NEW YORK, NY 10008-0770

Date Mailed: 10/30/2007

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Filing Receipt Corrections. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Mitel Kuliner, Rochester, NY;

Assignment For Published Patent Application

HARRIS CORPORATION, Melbourne, FL

Power of Attorney: The patent practitioners associated with Customer Number 68085

Domestic Priority data as claimed by applicant

Foreign Applications

Permission to Access - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

If Required, Foreign Filing License Granted: 10/30/2007

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 11/855,714**

Projected Publication Date: 03/19/2009

Non-Publication Request: No

Early Publication Request: No

Title

High Speed packet Processing in a Wireless Network

Preliminary Class

370

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as

set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Mitel Kuliner

Application No.: 11/855,714

Confirmation No.: 7436

Filed: September 14, 2007

Art Unit: N/A

For: HIGH SPEED PACKET PROCESSING IN A
WIRELESS NETWORK

Examiner: Not Yet Assigned

**RESPONSE TO NOTICE TO FILE MISSING PARTS
OF NON PROVISIONAL APPLICATION**

MS Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Applicant received a Notice to File Missing Parts of Non Provisional Application mailed September 20, 2007, indicating that an additional claim fee in the amount of \$100 for 2 claims over 20 was not paid. In response, please charge Deposit Account Number 08-0870 in the amount of \$100 pursuant to Fee Code 1202.

Please charge any deficiencies or credit any over payment to Deposit Account Number 08-0870.

Respectfully submitted,

Dated: October 22, 2007

By /Robert J. Sacco/
Robert J. Sacco
Registration No.: 35,667
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Attorneys/Agents For Applicant

{W:\17162\0208025-us0\01276929.DOC  }

Application No. 11/855,714
Amendment dated
First Preliminary Amendment

Docket No.: 17162/0208025-US0



UNITED STATES PATENT AND TRADEMARK OFFICE

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 United States Patent and Trademark Office
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APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
11/855,714	09/14/2007	Mitel Kuliner	7162-0233 (RF-406)

CONFIRMATION NO. 7436

FORMALITIES
 LETTER

68085
 DARBY & DARBY PC
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 CHURCH STREET STATION
 NEW YORK, NY 10005-0770

Date Mailed: 09/20/2007

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

*Filing Date Granted***Items Required To Avoid Abandonment:**

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given TWO MONTHS from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- Additional claim fees of \$100 as a non-small entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due.

SUMMARY OF FEES DUE:

Total additional fee(s) required for this application is \$100 for a non-small entity

- Total additional claim fee(s) for this application is \$100
 - \$100 for 2 total claims over 20.

Replies should be mailed to: Mail Stop Missing Parts
 Commissioner for Patents
 P.O. Box 1450
 Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.
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For more information about EFS-Web please call the USPTO Electronic Business Center at 1-866-217-9197 or

visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.



Office of Initial Patent Examination (571) 272-4000, or 1-800-PTO-9199

PART 2 - COPY TO BE RETURNED WITH RESPONSE



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APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
11/855,714	09/14/2007	Mitel Kuliner	7162-0233 (RF-406)

CONFIRMATION NO. 7436

FORMALITIES
 LETTER

68085
 DARBY & DARBY PC
 P.O. BOX 770
 CHURCH STREET STATION
 NEW YORK, NY 10005-0770

Date Mailed: 09/20/2007

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

*Filing Date Granted***Items Required To Avoid Abandonment:**

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given TWO MONTHS from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- Additional claim fees of \$100 as a non-small entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due.

SUMMARY OF FEES DUE:

Total additional fee(s) required for this application is \$100 for a non-small entity

- Total additional claim fee(s) for this application is \$100
 - \$100 for 2 total claims over 20.

Replies should be mailed to: Mail Stop Missing Parts
 Commissioner for Patents
 P.O. Box 1450
 Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.
<https://portal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at 1-866-217-9197 or

visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.



Office of Initial Patent Examination (571) 272-4000, or 1-800-PTO-9199

PART 1 - ATTORNEY/APPLICANT COPY

Electronic Patent Application Fee Transmittal				
Application Number:		11855714		
Filing Date:		14-Sep-2007		
Title of Invention:		High Speed packet Processing in a Wireless Network		
First Named Inventor/Applicant Name:		Mitel Kuliner		
Filer:		Robert Joseph Sacco/Joyce Dougherty		
Attorney Docket Number:		17162/0208025-US0		
Filed as Large Entity				
Utility Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Claims in excess of 20	1202	2	50	100
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				100

Electronic Acknowledgement Receipt

EFS ID:	2349224
Application Number:	11855714
International Application Number:	
Confirmation Number:	7436
Title of Invention:	High Speed packet Processing in a Wireless Network
First Named Inventor/Applicant Name:	Mitel Kuliner
Customer Number:	68085
Filer:	Robert Joseph Sacco/Joyce Dougherty
Filer Authorized By:	Robert Joseph Sacco
Attorney Docket Number:	17162/0208025-US0
Receipt Date:	22-OCT-2007
Filing Date:	14-SEP-2007
Time Stamp:	15:59:19
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment was successfully received in RAM	\$ 100
RAM confirmation Number	1059
Deposit Account	080870
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 and 1.17	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
1	Applicant Response to Pre-Exam Formalities Notice	11855714.pdf	22986	no	2
			0d477791825c93e3cb4942ab0a4c9a2d0576120f		
Warnings:					
Information:					
2	Miscellaneous Incoming Letter	00550959.PDF	46003	no	4
			8dbf215883c6091aba2ecb6da287f8694690da23		
Warnings:					
Information:					
3	Fee Worksheet (PTO-06)	fee-info.pdf	8153	no	2
			f67dab07be7734de1e74737b441f650878b69fea8		
Warnings:					
Information:					
Total Files Size (in bytes):			77142		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

Electronic Acknowledgement Receipt

EFS ID:	2349224
Application Number:	11855714
International Application Number:	
Confirmation Number:	7436
Title of Invention:	High Speed packet Processing in a Wireless Network
First Named Inventor/Applicant Name:	Mitel Kuliner
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
1	Applicant Response to Pre-Exam Formalities Notice	11855714.pdf	22986	no	2
			0d477791825c93e3cb4942ab0a4c9a2d0576120f		
Warnings:					
Information:					
2	Miscellaneous Incoming Letter	00550959.PDF	46003	no	4
			8dbf215883c6091aba2ecb6da287f8694690da23		
Warnings:					
Information:					
3	Fee Worksheet (PTO-06)	fee-info.pdf	8153	no	2
			f67dab07be7734de1e74737b441f650878b69fea8		
Warnings:					
Information:					
Total Files Size (in bytes):			77142		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO.	TOT CLAIMS	IND CLAIMS
11/855,714	09/14/2007	2616	1000	7162-0233 (RF-406)	22	2

CONFIRMATION NO. 7436

68085
DARBY & DARBY PC
P.O. BOX 770
CHURCH STREET STATION
NEW YORK, NY 10005-0770

FILING RECEIPT

Date Mailed: 09/20/2007

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Filing Receipt Corrections. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Mitel Kuliner, Rochester, NY;

Assignment For Published Patent Application

HARRIS CORPORATION, Melbourne, FL

Power of Attorney: The patent practitioners associated with Customer Number 68085

Domestic Priority data as claimed by applicant

Foreign Applications

Permission to Access - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

If Required, Foreign Filing License Granted:

Projected Publication Date: To Be Determined - pending completion of Security Review

Non-Publication Request: No

Early Publication Request: No

Title

High Speed packet Processing in a Wireless Network

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the

subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
 United States Patent and Trademark Office
 Address: COMMISSIONER FOR PATENTS
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 www.uspto.gov

APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
11/855,714	09/14/2007	Mitel Kuliner	7162-0233 (RF-406)

CONFIRMATION NO. 7436

FORMALITIES
 LETTER

68085
 DARBY & DARBY PC
 P.O. BOX 770
 CHURCH STREET STATION
 NEW YORK, NY 10005-0770

Date Mailed: 09/20/2007

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

*Filing Date Granted*Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given TWO MONTHS from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- Additional claim fees of \$100 as a non-small entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due.

SUMMARY OF FEES DUE:

Total additional fee(s) required for this application is \$100 for a non-small entity

- Total additional claim fee(s) for this application is \$100
 - \$100 for 2 total claims over 20.

Replies should be mailed to: Mail Stop Missing Parts
 Commissioner for Patents
 P.O. Box 1450
 Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.
<https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at 1-866-217-9197 or

visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

Ron

Office of Initial Patent Examination (571) 272-4000, or 1-800-PTO-9199
PART 3 - OFFICE COPY

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number			
	Filing Date			
	First Named Inventor	KULINER		
	Art Unit			
	Examiner Name			
	Attorney Docket Number	7162-0233		

U.S. PATENTS							Remove	
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear		
	1	6963586		2005-11-08	HENRIKSSON ET AL.			
If you wish to add additional U.S. Patent citation information please click the Add button.							Add	
U.S. PATENT APPLICATION PUBLICATIONS							Remove	
Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear		
	1	20020136202		2002-09-26	DROZ ET AL.			
	2	20070005925		2007-01-04	BURKLEY ET AL.			
	3	20070006293		2007-01-04	BALAKRISHNAN ET AL.			
If you wish to add additional U.S. Published Application citation information please click the Add button.							Add	
FOREIGN PATENT DOCUMENTS							Remove	
Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ²	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵
	1							☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		
	First Named Inventor	KULINER	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	7162-0233	

If you wish to add additional Foreign Patent Document citation information please click the Add button				Add
NON-PATENT LITERATURE DOCUMENTS				Remove
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.		T ⁵
	1			☐
If you wish to add additional non-patent literature document citation information please click the Add button				Add
EXAMINER SIGNATURE				
Examiner Signature				Date Considered
*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.				
¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.				

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		
	First Named Inventor	KULINER	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	7162-0233	

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☐ None

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature		Date (YYYY-MM-DD)	
Name/Print		Registration Number	

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		High Speed Packet Processing in a Wireless Network		
First Named Inventor/Applicant Name:		Mitel Kuliner		
Filer:		Robert Joseph Sacco/Joyce Dougherty		
Attorney Docket Number:		7162-0233 (RF-406)		
Filed as Large Entity				
Utility Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility application filing	1011	1	300	300
Utility Search Fee	1111	1	500	500
Utility Examination Fee	1311	1	200	200
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1000

Electronic Acknowledgement Receipt	
EFS ID:	2173704
Application Number:	11855714
International Application Number:	
Confirmation Number:	7436
Title of Invention:	High Speed Packet Processing in a Wireless Network
First Named Inventor/Applicant Name:	Mitel Kuliner
Customer Number:	68085
Filer:	Robert Joseph Sacco/Joyce Dougherty
Filer Authorized By:	Robert Joseph Sacco
Attorney Docket Number:	7162-0233 (RF-406)
Receipt Date:	14-SEP-2007
Filing Date:	
Time Stamp:	16:47:51
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment was successfully received in RAM	\$ 1000
RAM confirmation Number	1809
Deposit Account	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
-----------------	----------------------	-----------	----------------------------------	------------------	------------------

1	Application Data Sheet	01231936.pdf	1010721	no	4
			2876438bff616216998edce07bd9ff521ff709f		
Warnings:					
Information:					
2	Oath or Declaration filed	233DEC.pdf	651273	no	2
			7149982cbe2781c1fbaf9a97468ceb1971325475		
Warnings:					
Information:					
3		233Spec.pdf	7251049	yes	22
			920473d4453a91dd938fb7e108b36b13a23b0119		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	18	
	Claims		19	21	
	Abstract		22	22	
Warnings:					
Information:					
4	Drawings	233dwg.pdf	909634	no	5
			2dc2dfc06b8f0d9db8d3f14a489ffad6d2b1d7d6		
Warnings:					
Information:					
5	Authorization to access Appl. by Trilateral Office	233sb39.pdf	280235	no	1
			1be2496762c1830ef46dc5ab9c04d3b194ab6e9b		
Warnings:					
Information:					
6	Information Disclosure Statement (IDS) Filed	00017999.pdf	823778	no	4
			c2011496b724e4a79fab6ab7b763141bdb9726a		
Warnings:					
Information:					
7	Fee Worksheet (PTO-06)	fee-info.pdf	8374	no	2
			030f5e61274efeb39af77e061ab95fffb27a173a		
Warnings:					
Information:					
Total Files Size (in bytes):			10935064		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	7162-0233 (RF-406)
		Application Number	
Title of Invention	High Speed packet Processing in a Wireless Network		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Applicant Information:

Applicant 1					Remove
Applicant Authority		☒ Inventor		☐ Legal Representative under 35 U.S.C. 117	☐ Party of Interest under 35 U.S.C. 118
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Mitel		Kuliner		
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
City	Rochester	State/Province	NY	Country of Residence i	US
Citizenship under 37 CFR 1.41(b) i		US			
Mailing Address of Applicant:					
Address 1	281 Hollywood Avenue				
Address 2					
City	Rochester	State/Province	NY		
Postal Code	14618	Countryi	US		
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.					Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).			
☐ An Address is being provided for the correspondence Information of this application.			
Customer Number	68085		
Email Address	patent@darbylaw.com	Add Email	Remove Email

Application Information:

Title of the Invention	High Speed packet Processing in a Wireless Network		
Attorney Docket Number	7162-0233 (RF-406)	Small Entity Status Claimed	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Suggested Class (if any)		Sub Class (if any)	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)	5	Suggested Figure for Publication (if any)	1

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	7162-0233 (RF-406)
		Application Number	
Title of Invention	High Speed packet Processing in a Wireless Network		

Publication Information:

☐	Request Early Publication (Fee required at time of Request 37 CFR 1.219)
☐	Request Not to Publish. I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Enter either Customer Number or complete the Representative Name section below. If both sections are completed the Customer Number will be used for the Representative Information during processing.			
Please Select One:	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	68085		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78(a)(2) or CFR 1.78(a)(4), and need not otherwise be made part of the specification.			
Prior Application Status		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.			Add

Foreign Priority Information:

This section allows for the applicant to claim benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(a).			
			Remove
Application Number	Country i	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
			☒ Yes ☐ No
Additional Foreign Priority Data may be generated within this form by selecting the Add button.			Add

Assignee Information:

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Assignee 1	Remove

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	7162-0233 (RF-406)
		Application Number	
Title of Invention	High Speed packet Processing in a Wireless Network		

If the Assignee is an Organization check here. ☒			
Organization Name	HARRIS CORPORATION		
Mailing Address Information:			
Address 1	1025 West NASA Boulevard		
Address 2			
City	Melbourne	State/Province	FL
Country ⁱ	US	Postal Code	32919
Phone Number		Fax Number	
Email Address			
Additional Assignee Data may be generated within this form by selecting the Add button. Add 			

Signature:

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature.					
Signature	/Robert J. Sacco/			Date (YYYY-MM-DD)	2007-09-14
First Name	Robert	Last Name	Sacco	Registration Number	35667

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The information provided by you in this form will be subject to the following routine uses:

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3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 11/855714	
APPLICATION AS FILED – PART I						
(Column 1)		(Column 2)		SMALL ENTITY		OR
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)		
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			
TOTAL CLAIMS (37 CFR 1.16(i))	22	2	X\$ 25=			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2	*	X\$100=			
APPLICATION SIZE FEE (37 CFR 1.16(s))			If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))						
			N/A			
			TOTAL			
					OTHER THAN SMALL ENTITY	
			RATE (\$)	FEE (\$)		
			N/A	300		
			N/A	500		
			N/A	200		
			X\$50=	100		
			X\$200=			
			N/A			
			TOTAL	1100		
* If the difference in column 1 is less than zero, enter "0" in column 2.						
APPLICATION AS AMENDED – PART II						
(Column 1)		(Column 2)		(Column 3)		
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA			
	Total (37 CFR 1.16(i))	Minus **	=			
	Independent (37 CFR 1.16(h))	Minus ***	=			
	Application Size Fee (37 CFR 1.16(s))					
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					
				SMALL ENTITY		OR
				RATE (\$)	ADDITIONAL FEE (\$)	
				X =		
				X =		
				N/A		
				TOTAL ADD'T FEE		
				OTHER THAN SMALL ENTITY		
				RATE (\$)	ADDITIONAL FEE (\$)	
				X =		
				X =		
				N/A		
				TOTAL ADD'T FEE		
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.						
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".						
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".						
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.						

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Doc Code: PD.TO.AUTH

PTO/SB/39 (06-07)

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AUTHORIZATION TO PERMIT ACCESS TO APPLICATION BY PARTICIPATING OFFICES Send completed forms to: Commissioner for Patents P.O. Box 1450, Alexandria, VA 22313-1450	COMPLETE IF KNOWN	
	Application Number	
	Filing Date	
	First Named Inventor	KULINER
	Attorney Docket Number	7162-0233
	Title (Required)	High Speed Packet Processing in a Wireless Network

The undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), and any other intellectual property offices in which a foreign application claiming priority to the above-identified application is filed access to the above-identified patent application. See 37 CFR 1.14(c) and (h).

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the application-as-filed with respect to: 1) the above-identified application, 2) any foreign application to which the above-identified application claims priority under 35 USC 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the above-identified US application, and 3) any U.S. application from which benefit is sought in the above-identified application.

This written authorization should be submitted prior to the filing of a subsequent foreign application, in which priority is claimed to the above-identified application, with any intellectual property office (e.g., the EPO or JPO).

No fee will be charged under 37 CFR 1.19(b)(1) for providing a participating intellectual property office with an electronic copy of the above-identified application.

This form must be signed by an authorized party in accordance with 37 CFR 1.14(c).

_____ /Robert J. Sacco/ Signature	_____ Sept. 14, 2007 Date
_____ Robert J. Sacco Printed or Typed Name	_____ 561-626-2222 Telephone Number
_____ Attorney Title	_____ 35667 Registration Number, if applicable

{W:\JLD\MISC\01231938.DOC 1000000000 }

US

COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY (Includes Reference to PCT International Applications)	ATTORNEY DOCKET NUMBER RF-406; H8028 7162-0233																				
As a below named inventor, I hereby declare that: My residence, mailing address and citizenship are as stated below next to my name. I believe that I am the original and first inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled: HIGH SPEED PACKET PROCESSING IN A WIRELESS NETWORK the specification of which (check only one item below): ☒ is attached hereto. ☐ was filed as U.S. Patent Application Serial Number _____ On _____ as amended on _____ (if applicable). ☐ was filed as a PCT International application number _____ on _____, as amended on _____ (if applicable). I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR §1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application. I hereby claim foreign priority benefits under 35 U.S.C. §119(a)-(d) or (f), or §365(b) of any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or §365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or any PCT international application having a filing date before that of the applications on which priority is claimed: <table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 25%;">Prior Foreign Application Number(s)</th><th style="width: 20%;">Country</th><th style="width: 20%;">Foreign Filing Date (MM/DD/YYYY)</th><th style="width: 15%;">Priority Not Claimed</th><th style="width: 20%;">Certified Copy Attached?</th></tr></thead><tbody><tr><td> </td><td> </td><td> </td><td style="text-align: center;">☐</td><td style="text-align: center;">☐ YES ☐ NO</td></tr><tr><td> </td><td> </td><td> </td><td style="text-align: center;">☐</td><td style="text-align: center;">☐ YES ☐ NO</td></tr><tr><td> </td><td> </td><td> </td><td style="text-align: center;">☐</td><td style="text-align: center;">☐ YES ☐ NO</td></tr></tbody></table> ☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto:		Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached?				☐	☐ YES ☐ NO				☐	☐ YES ☐ NO				☐	☐ YES ☐ NO
Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached?																	
			☐	☐ YES ☐ NO																	
			☐	☐ YES ☐ NO																	
			☐	☐ YES ☐ NO																	

US

COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY (Includes Reference to PCT International Applications)			ATTORNEY DOCKET NUMBER RF-406; H8028 7162-0233		
I hereby claim the benefit under 35 U.S.C. Sections 120 or 119(e) of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:					
PRIOR U.S. APPLICATIONS OR PCT INTERNATIONAL APPLICATIONS DESIGNATING THE U.S. FOR BENEFIT UNDER 35 U.S.C. §120:					
U.S. APPLICATIONS			STATUS (Check One)		
U.S. APPLICATION NUMBER	U.S. FILING DATE	PATENTED	ABANDONED	PENDING	
PCT APPLICATIONS DESIGNATING THE U.S.					
PCT APPLICATION NUMBER	PCT FILING DATE	U.S. SERIAL NUMBERS			
POWER OF ATTORNEY: As a named inventor, I hereby appoint registered patent practitioners associated with Customer Number 68085 to prosecute this application and transact all business in the U.S. Patent and Trademark Office connected therewith.					
Send Correspondence to: Customer Number: 68085			Direct Telephone Calls to: Robert J. Sacco Tel: 561-626-2222		
201	FULL NAME OF INVENTOR	FAMILY NAME KULINER	FIRST GIVEN NAME Mitel	SECOND GIVEN NAME	
	RESIDENCE & CITIZENSHIP	CITY Rochester	STATE OR COUNTRY NY	COUNTRY OF CITIZENSHIP US	
	MAILING ADDRESS	MAILING ADDRESS 281 Hollywood Avenue	CITY Rochester	STATE & ZIP CODE/COUNTRY NY 14618/US	
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.					
SIGNATURE OF INVENTOR 201 					
DATE 7/5/07					

HIGH SPEED PACKET PROCESSING IN A WIRELESS NETWORK

BACKGROUND OF THE INVENTION

Statement of the Technical Field

[0001] The inventive arrangements relate to wireless networks. More particularly, the present invention relates to a method and apparatus for high speed protocol header processing at an intermediate and/or destination node of a packet-based communications network.

Description of the Related Art

[0002] There has been a growing demand for improved communication applications provided by packet-based communications networks. The phrase "packet-based communications network" as used herein refers to an internet protocol (IP) based communications network and a transmission control protocol/internet protocol (TCP/IP) based communications network. As a result the growing demand, a header processing approach has been employed to improve the abilities of the packet-based communications networks. The header processing approach includes the transmission of packets including signaling protocol data and/or application data between nodes of the packet-based communications networks. The application data can include voice data, video data, or the like. The nodes can be selected as a computer system, a routing device, a sensor, a battery powered wireless communications device, or any other device having a TCP/IP based packet interface.

[0003] To enable the transmission of packets between a set of nodes, the application data is encapsulated between one or more protocol stack layer headers and a frame check sequence (FCS). The phrase "frame check sequence" as used herein refers to extra checksum characters added to a packet or a frame in a communication protocol for error detection and correction. In this regard, it should be understood that a checksum is a form of a redundancy check. A checksum protects the integrity of data by detecting errors in the data that are sent through space or time.

{W:\jld\misc\01231934.DOC [REDACTED]}

[0004] For example, the application data is encapsulated between an application layer header (or protocol header) and the frame check sequence (FCS). The application layer header is encapsulated between a transport layer protocol header and the application data. The transport layer protocol header is encapsulated between a network layer protocol header and the application layer header. The network layer protocol header is encapsulated between a logic link control (LLC) layer protocol header and the transport layer protocol header. The logic link control (LLC) layer protocol header is encapsulated between a media access control (MAC) layer protocol header and the network layer protocol header. The media access control (MAC) layer protocol header is encapsulated between a physical layer protocol header and the logic link control (LLC) protocol header. The physical layer protocol header is encapsulated between a preamble and the media access control (MAC) layer protocol header. As should be understood, the encapsulation framework depends on the network's protocol model, such as an open system interconnection model or a Department of Defense protocol model. The protocol headers are comprised of fields to be processed at intermediate and/or destination nodes. Some protocol headers have long fields that require a comparison among several values. As such, a packet transmission often experiences relatively long delays due to protocol header processing at intermediate and/or destination nodes.

[0005] Many solutions have been proposed for decreasing the protocol header processing time at intermediate and/or destination nodes of a packet-based communications networks. One such solution employs a sequential processing approach. The sequential processing approach involves receiving an encoded packet at a node, decoding the received encoded packet, and processing protocol headers of the decoded packet in a sequential manner. In this regard, it should be noted that the sequential processing approach is dependant on methods to advance the protocol header processing from one protocol header to a next protocol header. This solution is based on either specialized processors configured for processing a particular protocol header and/or a general purpose central processing unit (CPU).

[0006] More specifically, the sequential processing approach includes the following steps: (1) receive a packet at an intermediate and/or a destination node; (2) decode the received packet at a physical layer processor; (3) process a preamble and a physical layer protocol header of the decoded packet at the physical layer processor; (4) sequentially write a media access control (MAC) layer protocol header, a logic link control (LLC) layer protocol header, a network layer protocol header, a transport layer protocol header, an application layer header, and an application data to a packet buffer memory for storage; (5) access the packet buffer memory and retrieve the media access control (MAC) layer protocol header therefrom; (6) process the media access control (MAC) layer protocol header at a media access control (MAC) layer processor; (7) access the packet buffer memory and retrieve the logic link control (LLC) layer protocol header therefrom; (8) process the logic link control (LLC) layer protocol header at a logic link control (LLC) layer processor; (9) access the packet buffer memory and retrieve the network layer protocol header therefrom; (10) process the network layer protocol header at a network layer processor; (11) access the packet buffer memory and retrieve the transport layer protocol header therefrom; (12) process the transport layer protocol header at a transport layer processor; (13) access the packet buffer memory and retrieve the application layer header therefrom; and (14) process the application layer header at an application layer processor. Despite the advantages of the sequential processing approach, it suffers from certain drawbacks. For example, the majority of protocol header processing tasks are implemented in software as generic packet processing methods.

[0007] Another such solution employs fixed function applications specific integrated circuits (ASICs) and field programmable gate arrays (FPGAs). Despite the advantages of such fixed function devices, they suffer from certain drawbacks. For example, the fixed function devices cannot handle updating processing header fields. Further, the fixed function devices always defer protocol header processing to a general purpose processor. The general purpose processor cannot operate at a desired speed for a battery powered wireless communications device. The general purpose processor also cannot accommodate changes in timing needs due to high speed, very high bandwidth data traffic.

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[0008] In view of the forgoing, there is a need for a solution to reduce protocol header processing time in a packet-based communications networks. This solution also needs to be configured to update header fields. The solution further needs to be configured to process protocol headers at a desired speed for a battery powered wireless communications device. In this regard, it should be understood that a battery powered wireless communications device can be a node in a high speed wireless communications system. As such, the battery powered wireless communications device can concurrently act as an intermediate node and a destination node. As such, the roles of the battery powered wireless communications device can alternate and vary based on time or traffic conditions.

SUMMARY OF THE INVENTION

[0009] The invention concerns a method for processing a packet at an egress end user node. The method includes a decoding step and a concurrent writing step. The decoding step involves decoding a packet having a plurality of headers. The concurrent writing step is performed subsequent to the decoding step. The concurrent writing step involves concurrently writing (1) each of the headers to a packet buffer memory and (2) each individual one of the headers to a respective protocol stack layer memory where it is available for immediate processing within a protocol stack layer.

[0010] According to an aspect of the invention, at least one of the headers is a media access control layer protocol header and the respective protocol stack layer memory is a media access control layer memory. At least one of the headers is a logic link control layer protocol header and the respective protocol stack layer memory is a logic link control layer memory. At least one of the headers is a network layer protocol header and the respective protocol stack layer memory is a media access control layer memory. At least one of the headers is a network layer protocol header and the respective protocol stack layer memory is a network layer memory. At least one of the headers is a transport layer protocol header and the respective protocol stack layer memory is a transport layer memory. At least one of the headers is an application layer header and the respective protocol stack layer memory is an application layer memory.

[0011] According to another aspect of the invention, the method includes concurrently processing the headers in each of a plurality of protocol stack layers. The method also includes communicating a portion of the packet to a direct memory access (DMA) device subsequent to the decoding step and prior to the concurrent writing step. The portion of the packet is absent of a preamble and a physical layer header. The method further includes communicating a physical layer header to a physical layer memory where it is available for immediate processing within a physical layer. This communicating step is performed subsequent to the decoding step. The concurrent writing step is performed within a physical layer utilizing a direct memory access (DMA) device.

[0012] An egress end user node (EEUN) of a packet based communications system is also provided. The EEUN is comprised of a decoder and a direct memory access (DMA) device. The decoder is configured to decode a packet having a plurality of headers. The DMA device is coupled to the decoder. The DMA device is configured to concurrently write (1) each of the headers to a packet buffer memory and (2) each individual one of the headers to a respective protocol stack layer memory where it is available for immediate processing within a protocol stack layer.

[0013] According to an aspect of the invention, at least one of the headers is a media access control layer protocol header and the respective protocol stack layer memory is a media access control layer memory. At least one of the headers is a logic link control layer protocol header and the respective protocol stack layer memory is a logic link control layer memory. At least one of the headers is a network layer protocol header and the respective protocol stack layer memory is a media access control layer memory. At least one of the headers is a network layer protocol header and the respective protocol stack layer memory is a network layer memory. At least one of the headers is a transport layer protocol header and the respective protocol stack layer memory is a transport layer memory. At least one of the headers is an application layer header and the respective protocol stack layer memory is an application layer memory.

[0014] According to another aspect of the invention, the decoder is configured to communicate a portion of the packet to the DMA device subsequent to decoding the packet. The portion of the packet is absent of a preamble and a physical layer header. The decoder is also configured to communicate a physical layer header to a physical layer memory where it is available for immediate processing within a physical layer. The decoder is configured to communicate the physical layer header to the physical layer memory subsequent to decoding the packet.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] Embodiments will be described with reference to the following drawing figures, in which like numerals represent like items throughout the figures, and in which:

[0016] FIG. 1 is a block diagram of a packet-based communications system that is useful for understanding the present invention.

[0017] FIG. 2 is a protocol stack for the packet-based communications system of FIG. 1 that is useful for understanding the present invention.

[0018] FIG. 3 is a block diagram of a packet that is useful for understanding the present invention.

[0019] FIG. 4 is a more detailed block diagram of the packet-based communication system in FIG. 1.

[0020] FIG. 5 is a schematic illustration of a conventional egress end user node (EEUN) configuration that is useful for understanding how the inventive arrangements differ from conventional EEUN configurations.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0021] FIG. 1 is a block diagram of a packet-based communications system 100. The packet-based communications system 100 is comprised of an ingress end user node (IEUN) 102, a network 108, and an egress end user node (EEUN) 110. The IEUN 102 is a source of a plurality of packets including data packets and signaling packets.

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The IEUN 102 can be a source computer system, a routing device, a sensor, a battery powered wireless communications device, or any other device having a TCP/IP based packet interface.

[0022] As shown in FIG. 1, the IEUN 102 is comprised of a packet generator 104 and an encoder 106. The packet generator 104 is configured to generate a packet. The packet generator 104 is also configured to forward packets to the encoder 106. The encoder 106 performs actions involving the encoding of packets for enabling an efficient transmission of the packets over a network link 112, 114.

[0023] The IEUN 102 is electrically or optically connected to the network 108 via the network link 112. As such, the IEUN 102 performs actions involving the communication of encoded packets to the network 108. The network 108 is a packet-based communication network. The phrase "packet-based communications network" as used herein refers to an internet protocol (IP) based communications network and a transmission control protocol/internet protocol (TCP/IP) based communications network. The network 108 is electrically or optically connected to the EEUN 110 via a network link 114. The EEUN 110 is an intermediate or destination node. If the EEUN 110 is a destination node, then the EEUN 100 is the destination of a plurality of packets in a network. The EEUN 110 can be a destination computer system, a routing device, a battery powered wireless communications device, or any other device having a TCP/IP based packet interface.

[0024] As shown in FIG. 1, the EEUN 110 is comprised of a decoder 116, a direct memory access (DMA) device 120, and a packet buffer memory 122. The EEUN 110 is also comprised of a media access control (MAC) layer memory 126, a logic link control (LLC) layer memory 128, a network layer memory 130, a transport layer memory 132, and an application layer memory 134. The decoder 116 is configured to receive an encoded packet from the network 108. Upon receipt of the encoded packet, the decoder 116 performs actions involving the decoding of the encoded packet for placing the same in a form that is readable to a particular computer program installed on the EEUN 110. In this regard, it should be appreciated that the decoder 116 is comprised of a physical layer memory 124. The physical layer memory 124 is provided for storing

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a portion of a decoded packet including preamble and physical layer information. The decoder 116 is also configured to advantageously forward a portion of a decoded packet that is absent of preamble and physical layer information to the DMA device 120.

[0025] The following discussion is provided to generally describe the DMA device 120. In this regard, it should be understood that, in general, there is no direct path from a peripheral device to a main memory space of a communications system. As such, the only way to transfer data between the peripheral's memory and main memory is for the central processing unit (CPU) to read the data from the peripheral's memory and write the data to the main memory space for storage, or vice versa. Some peripheral devices are able to transfer data to and from the main memory without passing the data through the CPU. This operation is called direct memory access (DMA) and is handled by a dedicated integrated circuit known as a DMA device. The general purpose of a DMA device is to allow peripheral devices to read or write data without involving a CPU.

[0026] In general, the DMA device 120 has programming registers for multiple memory transfers. The programming registers are also referred to as DMA channels. In order to choose and uniquely identify a single transfer, a DMA channel is programmed for performing actions to read data from a memory device, to write data to a memory device, to obtain an address for a source memory device, to obtain an address for a destination memory device, and/or to obtain a memory length. The DMA device 120 can also service multiple DMA channels and perform multiple data transfers.

[0027] In a conventional EEUN, a packet is transferred from a MAC layer memory to a CPU main memory through a serial or parallel memory transfer performed by a CPU. The CPU main memory space used for the packet transfer is known as the packet buffer memory 122. Each of the protocol stack layers use the packet buffer memory 122 to copy it's respective header into its own processing memory for receive processing. Each of the protocol stack layers writes its header to the packet buffer memory 122 when transmit processing is completed.

[0028] Some conventional EEUN architectures do include one or more DMA devices. However, the DMA devices are provided only for a one time transfer of a

packet from the MAC layer memory to a CPU main memory. As will be appreciated, this single transfer does not solve or deal with the varying latencies and the increased processing consequences present in a high speed wireless network.

[0029] In order to solve this problem, a DMA device is used to concurrently write the specific layer header fields directly into: (a) each protocol stack layer's internal memory spaces 126, . . . , 134 to initiate immediate processing; and (b) the packet buffer memory 122. This arrangement provides what is essentially a cross layer architecture framework. This approach facilitates a high data transfer rate by allowing the exchange of information between the protocol stack layers. In doing so, it reduces processing latency and thereby increases bandwidth.

[0030] Referring again to FIG. 1, the DMA device 120 is configured to process a received portion of a decoded packet. In this regard, it should be appreciated that the DMA device 120 performs actions involving directly accessing the packet buffer memory 122, the media access control (MAC) layer memory 126, the logic link control (LLC) layer memory 128, the network layer memory 130, the transport layer memory 132, and the application layer memory 134. The DMA device 120 is also configured to concurrently communicate data to the packet buffer memory 122, the media access control (MAC) layer memory 126, the logic link control (LLC) layer memory 128, the network layer memory 130, the transport layer memory 132, and the application layer memory 134. The DMA device 120 allows the transfer of data to these various memory locations in a single DMA transaction.

[0031] The following discussion is provided to describe how the DMA device concurrently communicates data to the different memories 122, 126, . . . , 134. In this regard, it should be understood that the DMA device 120 is configured to allow each of the protocol stack layers to concurrently begin header processing without having to wait for one or more other protocol stack layer's to complete its header processing. For example, respective headers of a packet are concurrently processed in the MAC layer, the LLC layer, the network layer, the transport layer and the application layer.

[0032] According to an embodiment of the invention, the DMA device 120 is configured to temporarily store headers from a MAC layer, the LLC layer, the network layer, the transport layer and an application layer in a memory internal to the DMA device 120. The DMA device is also configured to temporarily store payload data in a memory internal to the DMA device 120. Thereafter, the DMA device 120 performs actions to concurrently write the headers and payload to the packet buffer memory 122 and at least one of the MAC layer memory 126, the LLC layer memory 128, the network layer memory 130, the transport layer memory 132, and the application layer memory 134. Still, the invention is not limited in this regard.

[0033] Those skilled in the art will appreciate that the packet based communications system 100 architecture illustrated in FIG. 1 is one possible example of a packet based communications system. However, the invention is not limited in this regard and any other suitable packet based communications system architecture can also be used without limitation.

[0034] Referring now to FIG. 2, there is provided a protocol stack for the packet-based communications system 100 of FIG. 1. According to the embodiment shown in FIG. 2, the protocol stack 200 includes five layers 202, 204, 206, 220, 212 specifying particular functions of the packet-based communications system 100. Still, the invention is not limited in this regard. The protocol stack 200 can include any number of layers in accordance with a particular packet-based communications system application. For example, if an open system interconnection (OSI) protocol stack is employed by the packet-based communications system 100 then the protocol stack 200 can further include a session layer and a presentation layer.

[0035] Referring again to FIG. 1, the protocol stack 200 provides a framework illustrating how information is passed from a software application installed in the IEUN 102 (described above in relation to FIG. 1) to a software application installed in the EEUN 110 (described above in relation to FIG. 1). The protocol stack 200 is well known to persons skilled in the art. Thus, the protocol stack 200 will not be described in detail herein. However, a brief discussion is provided below to assist a reader in

understanding direct memory access (DMA) write operations (described below in relation to FIG. 4).

[0036] Referring again to FIG. 2, the protocol stack 200 is comprised of a physical layer 212, a data link layer 220, a network layer 206, a transport layer 204, and an application layer 202. The physical layer 212 is comprised of firmware and/or hardware configured to send and receive data through a network 108 (described above in relation to FIG. 1). The data link layer 220 provides transmission protocols for transferring data between network 108 nodes. Such transmission protocols can include an Ethernet protocol (or an IEEE802.3 protocol), a point-to-point protocol, an IEEE802.11 protocol, an IEEE802.15 protocol, an IEEE802.16 protocol, and other such protocols.

[0037] As shown in FIG. 2, the data link layer 220 can be comprised of two (2) sub-layers, namely a logic link control (LLC) layer 208 and a media access control (MAC) layer 210. The logic link control (LLC) layer 208 is comprised of firmware and/or hardware configured to multiplex protocols prior to being transmitted over the media access control (MAC) layer 210 and to demultiplex protocols subsequent to being transmitted and upon receipt. The logic link control (LLC) layer 208 is also comprised of firmware and/or hardware configured to provide flow control of packets, detection of packets, and retransmission of dropped packets.

[0038] The media access control (MAC) layer 210 is comprised of firmware and/or hardware configured to determine when to transmit communications and when to receive communications. In this regard, the media access control (MAC) layer 210 performs actions involving coordinating access to a shared radio channel and utilizing protocols that enhance communications over a wireless link 112, 114 (described above in relation to FIG. 1). The term "protocol" as used herein refers to a set of rules defining how information is exchanged between network nodes. Such network nodes include, but are not limited to, the IEUN 102 (described above in relation to FIG. 1) and the EEUN 110 (described above in relation to FIG. 1). The media access control (MAC) layer 210 provides transmission protocols for transferring data between network 108 nodes. Such transmission protocols include media access control (MAC) protocols. Media access control (MAC) protocols ensure that signals sent from different nodes

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across the same channel do not collide.

[0039] The network layer 206 is comprised of firmware configured to transfer data from one node to another node. In this regard, the network layer 206 provides protocols for transferring data from one node to another node. The transmission protocols include routing protocols and forwarding protocols. Such transmission protocols include internet protocols, such as a version four (4) of the internet protocol (IPv4), a version six (6) of the internet protocol (IPv6), and internet security protocols (IP Layer Security).

[0040] The transport layer 204 is comprised of firmware configured to communicate data between end systems. In this regard, the transport layer 204 provides transport protocols for transmission of data between end systems. Such transport protocols include a transmission control protocol (TCP) and a user datagram protocol (UDP). The application layer 202 is generally implemented only in firmware. The application layer 202 provides signaling protocols for end-user applications, such as authentication applications, data syntax applications, quality of service applications, and end-user applications.

[0041] Referring now to FIG. 3, there is provided a block diagram of a packet 300. As shown in FIG. 3, the packet 300 is comprised of a preamble 302, a physical layer protocol header 304, a media access control (MAC) layer protocol header 306, a logic link control (LLC) layer protocol header 308, a network layer protocol header 310, and a transport layer protocol header 312. The packet 300 is also comprised of an application layer header 314, an application data 316, and a frame check sequence (FCS) 318. The phrase "frame check sequence" as used herein refers to extra checksum characters added to a packet or a frame in a communication protocol for error detection and correction. Each of the listed components of the packet 300 are well known to persons skilled in the art and are well defined in open industry standards of the Institute of Electrical and Electronics Engineers (IEEE) Standard for Local and Metropolitan Area Networks and Internet Engineering Task Force (IETF). Thus, such components will not be described in detail herein.

[0042] However, it should be appreciated that the application data 316 can be

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signaling protocol data, user data, or management data. The user data can include voice data, video data, or the like. It should also be appreciated that the application data 316 is encapsulated between the application layer header 314 and the frame check sequence (FCS) 318. The application layer header 314 is encapsulated between the transport layer protocol header 312 and the application data 316. Similarly, the transport layer protocol header 312 is encapsulated between the network layer protocol header 310 and the application layer header 314. Likewise, the network layer protocol header 310 is encapsulated between the logic link control (LLC) layer protocol header 308 and transport layer protocol header 312. The logic link control (LLC) layer protocol header 308 is encapsulated between the media access control (MAC) layer protocol header 306 and the network layer protocol header 310. The media access control (MAC) layer protocol header 306 is encapsulated between the physical layer protocol header 304 and the logic link control (LLC) layer protocol header 308. The physical layer protocol header 304 is encapsulated between the preamble 302 and the media access control (MAC) layer protocol header 306.

[0043] Referring now to FIG. 4, there is provided a more detailed block diagram of the packet based communications system of FIG. 1. The block diagram is useful for understanding how application data 316 (described above in relation to FIG. 3) is being transferred from a software application 402₁ of the IEUN 102 (described above in relation to FIG. 1) to a software application 404₂ of the EEUN 110 (described above in relation to FIG. 1). In FIG. 4, the application data 316 is generated by the software application 402₁ and is passed from the software application 402₁ to an application layer 202₁ (described above in relation to FIG. 2). The application layer 202₁ performs action involving encapsulating the application data 316 between an application layer header 314 (described above in relation to FIG. 3) and a frame check sequence (FCS) 318 (described above in relation to FIG. 3). As should be understood, the application layer header 314 includes control information required by an application layer 202₂ (described above in relation to FIG. 2) in the EEUN 110. The application layer 202₁ also performs actions involving forwarding the application layer header 314, the application data 316, and the frame check sequence (FCS) 318 to a transport layer 204₁ (described above in relation to FIG. 2).

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[0044] The transport layer 204₁ performs actions involving generating a transport layer protocol header 312 (described above in relation to FIG. 3) and adding the transport layer protocol header 312 to the received information. The transport layer protocol header 312 includes control information required by a transport layer 204₂ (described above in relation to FIG. 2) in the EEUN 110. Subsequently, the transport layer 204₁ performs actions involving forwarding the information 312, 314, 316, 318 to a network layer 206₁ (described above in relation to FIG. 2), and so on down to the physical layer 212₁ (described above in relation to FIG. 2). At the physical layer 212₁, a preamble 302 (described above in relation to FIG. 3) and a physical layer protocol header 304 (described above in relation to FIG. 3) are generated. The physical layer protocol header 304 is added to the received information such that the received information is encapsulated between the physical layer protocol header 304 and the frame check sequence (FCS) 318. The physical layer also adds the preamble 302 to the encapsulated information thereby forming the packet 300 (described above in relation to FIG. 3). The physical layer 212₁ performs actions involving placing the packet 300 on a physical medium, encoding the packet 300, and communicating the encoded packet 300' to the network 108.

[0045] In turn, the network 108 communicates the encoded packet 300' to a decoder 116 (described above in relation to FIG. 1) of the EEUN 110. Upon receipt of the encoded packet 300', the decoder 116 performs actions to decode the same to obtain a decoded packet 300'. The decoder 116 also performs actions to remove the preamble 302 and the physical layer protocol header 304 from the decoded packet 300. The decoder 116 can further perform actions to forward the preamble 302 and the physical layer protocol header 304 to the physical (PHY) layer memory 124 for storage. Thereafter, the decoder 116 performs actions to communicate a portion of the decoded packet 300 to a DMA device 120 (described above in relation to FIG. 1). In this regard, it should be understood that the portion of the decoded packet 300 includes a media access control protocol header 306 (described above in relation to FIG. 3), a logic link control (LLC) protocol header 308 (described above in relation to FIG. 3), a network layer protocol header 310 (described above in relation to FIG. 3), the transport layer protocol header 312, the application layer header 314, and the application data 316.

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The portion of the decoded packet 300 may also include the frame check sequence (FCS) 318.

[0046] Upon receipt of the portion of the decoded packet 300, the DMA device 120 performs write operations to concurrently write the headers 306, 308, 310, 312, 314, and the application data 316 to the packet buffer memory 122 and a respective layer memory 126, 128, 130, 132, 134. More specifically, the DMA device 120 concurrently performs a plurality of write operations. The write operations include a write operation for concurrently communicating the media access control (MAC) layer protocol header 306 to the packet buffer memory 122 and the media access control (MAC) layer memory 126. The write operations also include a write operation for concurrently communicating the logic link control (LLC) layer protocol header 308 to the packet buffer memory 122 and the logic link control (LLC) layer memory 128. The write operations further include a write operation for concurrently communicating the network layer protocol header 310 to the packet buffer memory 122, the media access control (MAC) layer memory 126, and/or the network layer memory 130. In this regard, it should be understood that the network layer protocol header 310 can be written to the media access control (MAC) layer memory 126 in accordance with certain wireless communication applications. Such applications include, but are not limited to, a bridging application, a routing application, a mobility application, and an Ad-Hoc mesh network application. The write operations include a write operation for concurrently communicating the transport layer protocol header 312 to the packet buffer memory 122 and the transport layer memory 132. The write operations include a write operation for concurrently communicating the application layer header 314 to the packet buffer memory 122 and the application layer memory 134, and so on. Still, the invention is not limited in this regard.

[0047] It should be noted that each write operation utilizes two (2) parameters, namely a destination address and a known length of a header 306, 308, 310, 312, 314, and an application data 316. It should also be noted that the write operations are performed to facilitate immediate processing of the headers 306, 308, 310, 312, 314 by a respective protocol stack layer 202₂, 204₂, 206₂, 208₂, 210₂. It should further be noted

that the write operations employed by the DMA device 120 enable concurrent header and/or data processing by each of the protocol stack layers 210₂, 208₂, 206₂, 204₂, 202₂. As such, the DMA device 120 provides an increased packet processing time feature to the EEUN 110.

[0048] Referring again to FIG. 4, each of the protocol stack layers 210₂, 208₂, 206₂, 204₂, 202₂ can begin processing its header 306, 308, 310, 312, 314 immediately after storage of the same in a respective memory 126, 128, 130, 132, 134. Methods for processing headers 306, 308, 310, 312, 314 are well known to persons skilled in the art, and therefore will not be described in great detail herein. However, it should be understood that the methods can include, but are not limited to, header validations, header content error checks, field searches, field extractions, and the like. It should also be understood that any such method can be used without limitation.

[0049] As shown in FIG. 4, the application layer 202₂ is directly connected to the software application 404₂. As such, the application layer 202₂ is configured to receive the application data 316 from the DMA device 120 and communicate the same to the software application 404₂.

[0050] It should be noted that the above described EEUN 110 configuration differs from conventional EEUN configurations. An example of a conventional EEUN configuration is provided in FIG. 5 that is useful for understanding how the inventive arrangements differ from conventional EEUN configurations.

[0051] Referring now to FIG. 5, an encoded packet 300' is communicated from an IEUN 502 to an EEUN 510. Upon receipt of the encoded packet 300', a decoder 516 performs actions to decode the same. The decoder 516 also performs actions to forward a portion of a decoded packet 300 that is absent of a preamble and physical layer information to a packet buffer memory 520.

[0052] Thereafter, each protocol stack layer processes its respective layer information in a sequential manner. For example, the decoder 516 notifies the media access control (MAC) layer 210 when the portion of the decoded packet 300 is stored in the packet buffer memory 520. Upon being notified, the media access control (MAC)

layer 210 performs actions to access the packet buffer memory 520, retrieve the media access control (MAC) layer protocol header 306 therefrom, and store the media access control (MAC) layer protocol header 306 in a media access control (MAC) layer memory 526. The media access control (MAC) layer 210 also performs actions to process the media access control (MAC) layer protocol header 306. Upon completion of the media access control (MAC) layer protocol header 306 processing, the media access control (MAC) layer 210 communicates a notification to the logic link control (LLC) layer 208.

[0053] In response to the notification, the logic link control (LLC) layer 208 performs actions to access the packet buffer memory 520, retrieve a logic link control (LLC) layer protocol header 308 therefrom, and store the logic link control (LLC) layer protocol header 308 in a logic link control (LLC) layer memory 528. The logic link control (LLC) layer also performs actions to process the logic link control (LLC) layer protocol header 308. Upon completion of the logic link control (LLC) layer protocol header 308 processing, the logic link control (LLC) layer 208 communicates a notification to the network layer 206, and so on, until the application layer 202 is reached.

[0054] Finally, the application layer 202 performs actions to access the packet buffer memory 520, retrieve an application layer header 314 therefrom, and store the application layer header 314 in an application layer memory 534. The application layer 202 also performs actions to process the application layer header 314. The application layer 202 further performs actions to access the packet buffer memory 520, retrieve an application data 316 therefrom, and forward the same to the software application 504.

[0055] As should be understood, the EEUN 510 configuration of FIG. 5 is the most efficient of conventional configurations. Other conventional EEUN configurations include two or more separate packet buffer memories. Typically, the packet buffer memories are segregated by protocol stack 200 layers. For example, an EEUN configuration includes a first packet buffer memory for the physical layer 212, the medium access control (MAC) layer 210 and the logic link control (LLC) layer 208. The EEUN configuration includes a second buffer memory for the network layer 206 and the transport layer 204. The EEUN configuration includes a third packet buffer memory for the application layer 202 and the software application 504. In such a scenario, the

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entire packet 300 is copied to a new packet buffer memory when each group completes its respective header 304, 306, 308, 310, 312, 314 processing. One can appreciate that the conventional EEUN configurations has a significantly greater protocol header processing time as compared to the EEUN configuration 400 (described above in relation to FIG. 4).

[0056] All of the apparatus, methods and algorithms disclosed and claimed herein can be made and executed without undue experimentation in light of the present disclosure. While the invention has been described in terms of preferred embodiments, it will be apparent to those of skill in the art that variations may be applied to the apparatus, methods and sequence of steps of the method without departing from the concept, spirit and scope of the invention. More specifically, it will be apparent that certain components may be added to, combined with, or substituted for the components described herein while the same or similar results would be achieved. All such similar substitutes and modifications apparent to those skilled in the art are deemed to be within the spirit, scope and concept of the invention as defined.

CLAIMS

We claim:

1. A method for processing a packet at an egress end user node, comprising:
decoding a packet having a plurality of headers; and
subsequent to said decoding step, concurrently writing (1) each of said plurality of headers to a packet buffer memory and (2) each individual one of said plurality of headers to a respective protocol stack layer memory where it is available for immediate processing within a protocol stack layer.
2. The method according to claim 1, wherein at least one of said plurality of headers is a media access control layer protocol header and said respective protocol stack layer memory is a media access control layer memory.
3. The method according to claim 1, wherein at least one of said plurality of headers is a logic link control layer protocol header and said respective protocol stack layer memory is a logic link control layer memory.
4. The method according to claim 1, wherein at least one of said plurality of headers is a network layer protocol header and said respective protocol stack layer memory is a media access control layer memory.
5. The method according to claim 1, wherein at least one of said plurality of headers is a network layer protocol header and said respective protocol stack layer memory is a network layer memory.
6. The method according to claim 1, wherein at least one of said plurality of headers is a transport layer protocol header and said respective protocol stack layer memory is a transport layer memory.
7. The method according to claim 1, wherein at least one of said plurality of headers is an application layer header and said respective protocol stack layer memory is an application layer memory.

16. The EEUN according to claim 13, wherein at least one of said plurality of headers is a network layer protocol header and said respective protocol stack layer memory is a media access control layer memory.
17. The EEUN according to claim 13, wherein at least one of said plurality of headers is a network layer protocol header and said respective protocol stack layer memory is a network layer memory.
18. The EEUN according to claim 13, wherein at least one of said plurality of headers is a transport layer protocol header and said respective protocol stack layer memory is a transport layer memory.
19. The EEUN according to claim 13, wherein at least one of said plurality of headers is an application layer header and said respective protocol stack layer memory is an application layer memory.
20. The EEUN according to claim 13, wherein said decoder is further configured for communicating a portion of said packet to said DMA device subsequent to decoding said packet.
21. The EEUN according to claim 20, wherein said portion is absent of a preamble and a physical layer header.
22. The EEUN according to claim 13, wherein said decoder is further configured for communicating a physical layer header to a physical layer memory where it is available for immediate processing within a physical layer subsequent to decoding said packet.

HIGH SPEED PACKET PROCESSING IN A WIRELESS NETWORK

ABSTRACT

A method is provided for processing a packet (300) at an egress end user node (110). The method includes a decoding step and a concurrent writing step. The concurrent writing step is performed subsequent to the decoding step. The decoding step involves decoding a packet having a plurality of headers (306-314). The concurrent writing step involves concurrently writing each of the headers (306-314) to a packet buffer memory (122) and a respective protocol stack layer memory (126-134). More specifically, a MAC layer protocol header (306) is concurrently written to the packet buffer memory and a MAC layer memory (126). An LLC layer protocol header (308) is concurrently written to the packet buffer memory and an LLC layer memory (128). A network layer protocol header (310) is concurrently written to the packet buffer memory and a network layer memory (130), and so on.

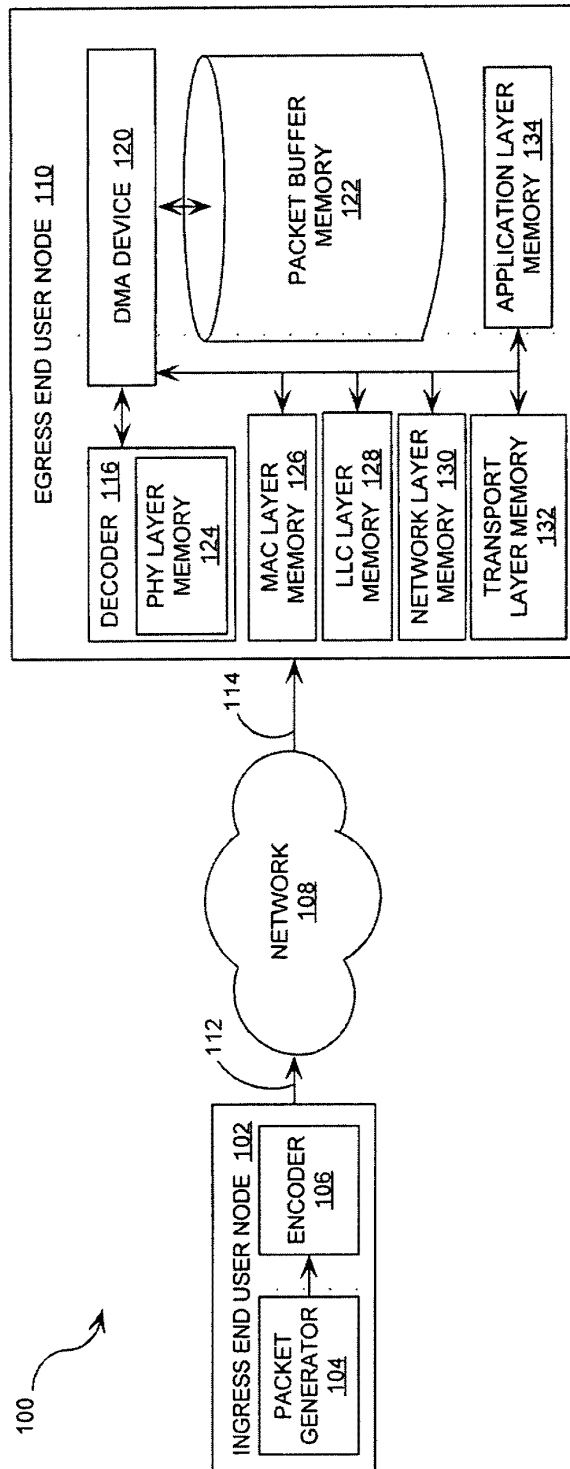


FIG. 1

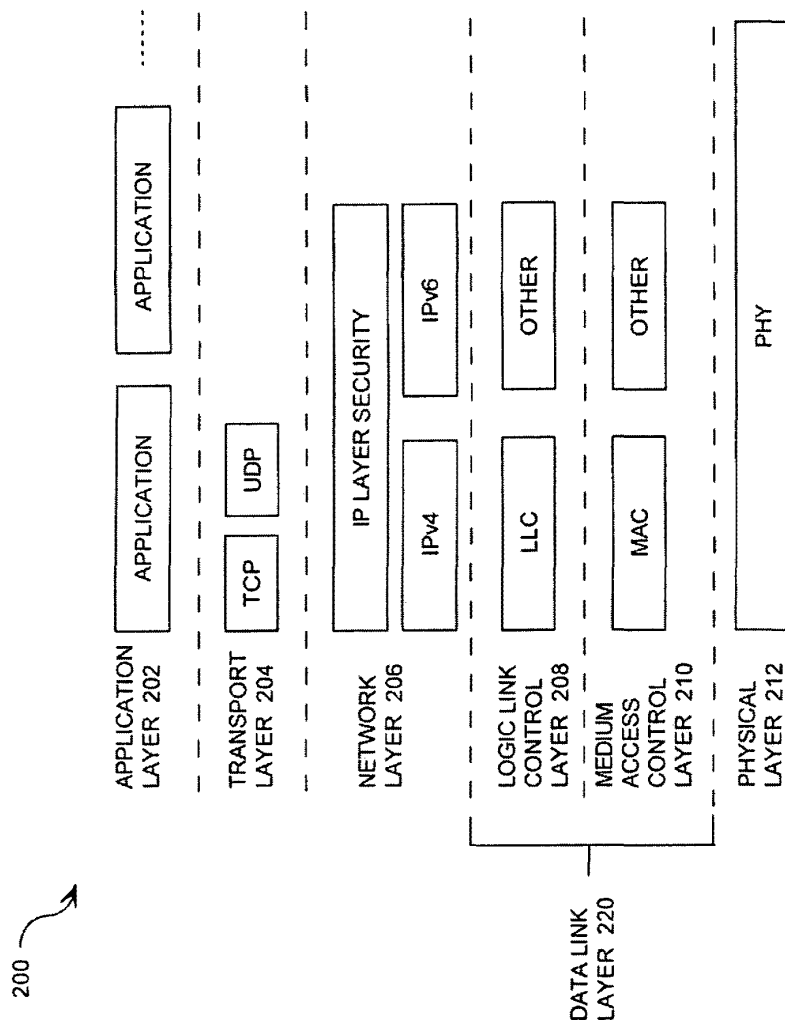


FIG. 2
(PRIOR ART)

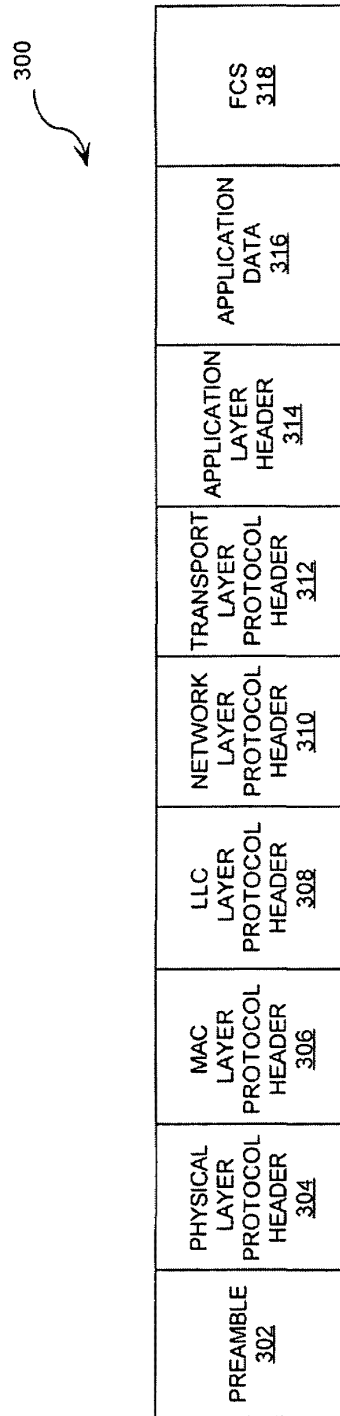
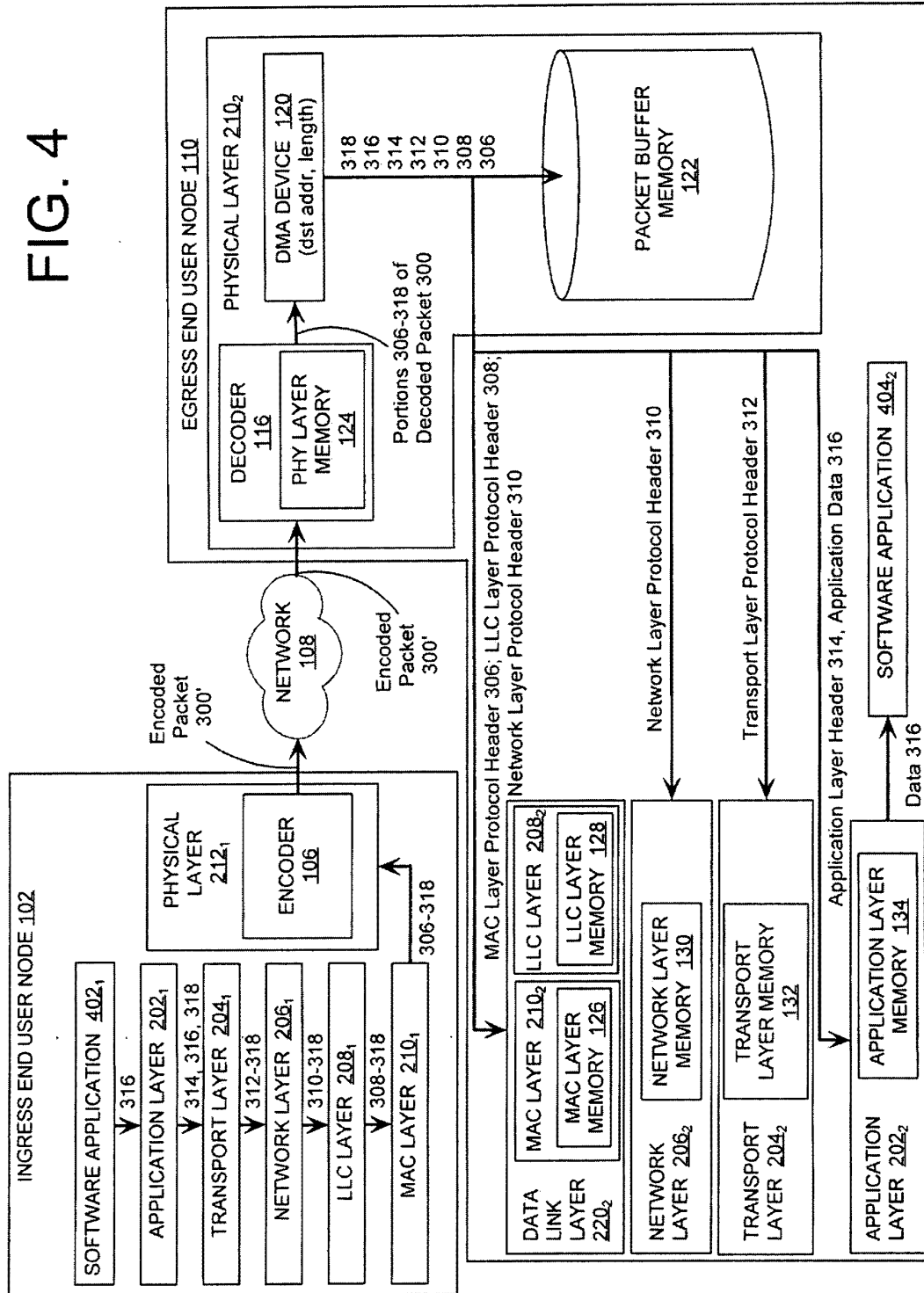


FIG. 3
(PRIOR ART)

FIG. 4



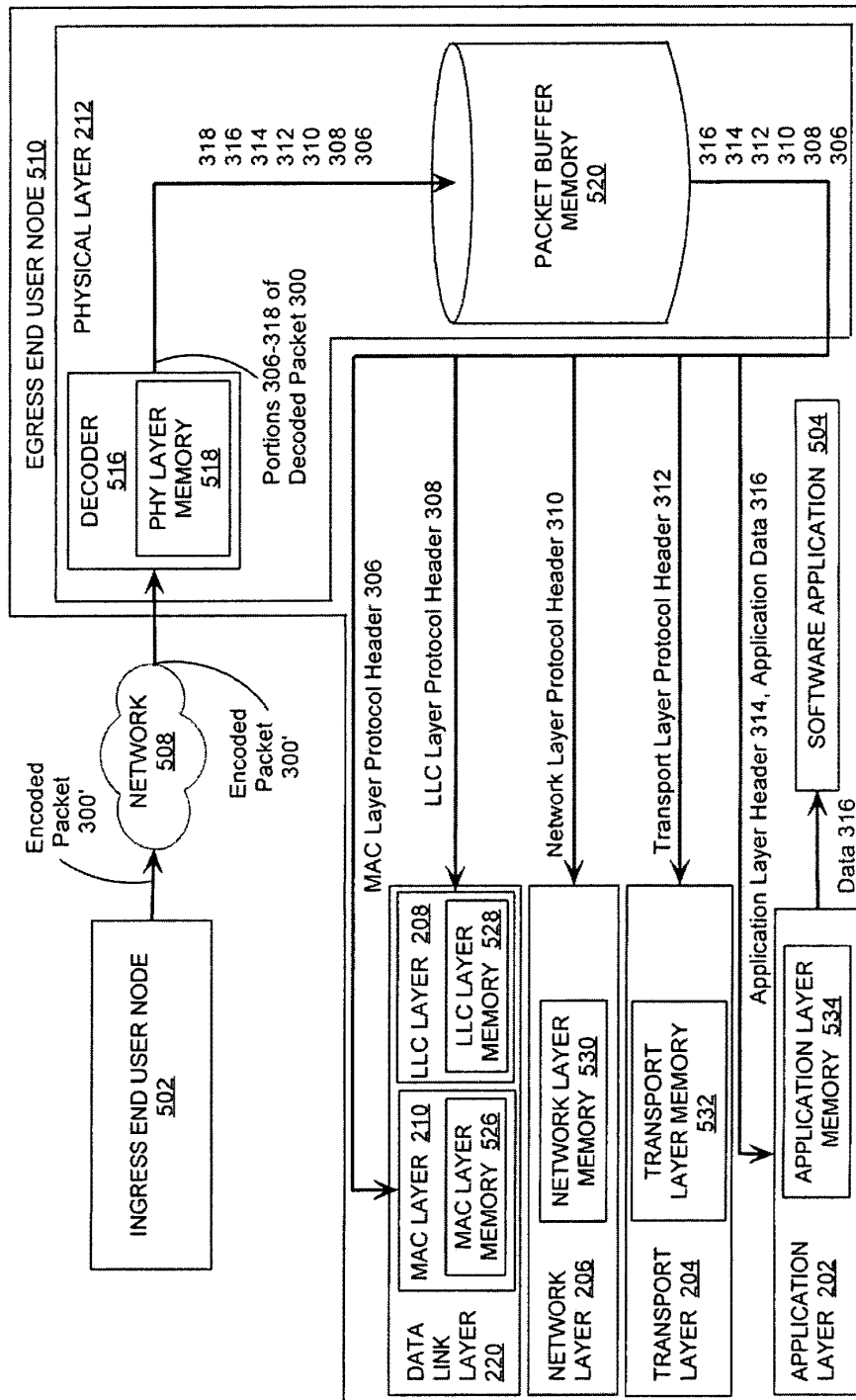


FIG. 5
(PRIOR ART)